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# USSR Report

## ECONOMIC AFFAIRS

EKO: ECONOMICS AND ORGANIZATION  
OF INDUSTRIAL PRODUCTION

No. 12, December 1984

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1 April 1985

## USSR REPORT ECONOMIC AFFAIRS

### EKO: ECONOMICS AND ORGANIZATION OF INDUSTRIAL PRODUCTION

No 12, December 1984

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## PERSPECTIVES OF PLANNING, MANAGEMENT VIEWED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 12, Dec 84 pp 3-20

[Article by Academician N. F. Fedorenko, director of the Central Economics and Mathematics Institute of the USSR Academy of Sciences (Moscow): "Planning and Management: What Should They Be?"]

[Text] The main reserves for intensifying the economy and increasing its effectiveness are now in the sphere of management of the national economy, and the party is quite pointedly setting the task of utilizing these reserves. General Secretary of the CPSU Central Committee Comrade K. U. Chernenko in his speech at the extraordinary February (1984) Plenum of the CPSU Central Committee said: "The system of management of the economy and our entire economic mechanism is in need of serious restructuring."

### The Nature of the Crucial Problems

The December (1983) Plenum of the CPSU Central Committee adopted a decision concerning the development of a program for comprehensive improvement of the entire management mechanism, including the organizational structure, planning, economic levers and stimuli. "Only comprehensive, intercoordinated consideration of the issues of improving the system of management," it was said at the plenum, "can solve the problem of fuller utilization of the advantages which lie in the socialist method of production." Partial changes and the adjustment of individual parts of the existing mechanism are no longer sufficient, and large-scale comprehensive measures are needed. Such is the nature of the crucial problems.

Yes, the measures for strengthening discipline and imposing order were timely and effective. This is shown by an analysis conducted by the TsEMI of the USSR Academy of Sciences of the Dynamics of Losses of Working Time, which showed that in recent years the increase in these losses was one of the main factors in the dropping off of the growth rates of labor productivity. But still strengthening discipline is only a prerequisite for improving the economic mechanism. Only a large amount of work will make it possible to reinforce the success that has been achieved. Everyone agrees that it is necessary to expand the rights of the enterprises, and then it will be possible to realistically increase their material responsibility as well. But

if the expansion of the rights does not change the fundamentals for the formation of the plan for production and supply, little will actually improve. It is necessary to reduce the list of fund-forming products and to develop full-fledged contractual relations. And all this draws us toward a restructuring of the system of prices and other economic levers which would orient the enterprise toward nationwide interests.

The root of the problem lies in the fact that in the current mechanism there is no coordination between the planning assignments which reflect nationwide interests and the system of economic levers that are applied. These levers are not coordinated with the goals of the plan and therefore they act in opposition to each other in many cases. As a result, reliance is placed on administrative compulsion and concentration in the central agencies of the largest possible economic decisions, which leads to a loss of the flexibility in management and to increased irresponsibility.

And so we are speaking about restructuring the system of economic levers and placing them in the service of the goals of the plan, and transforming them into an effective instrument for coordinating public, collective and private interests. I emphasize that this path is in principle different from the formulas of "market socialism" and decentralization. On the contrary, its goal is to strengthen authentic centralism, democratic centralism. This path corresponds more to the conditions of developed socialism. The need for it is predetermined by the nature of those tasks which will have to be carried out. One can single out three major tasks.

First: acceleration of scientific and technical progress. It is hardly necessary to go into a detailed clarification of its significance and content. One need only note that this task cannot be reduced to selecting the best, the most effective plans and measures. It is primarily a matter of creating organizational and economic conditions whereby the best plans will appear and the enterprises and organizations will select on a mass scale precisely these plans, and, finally, they will provide for their implementation in the shortest possible period of time while they still continue to be the best ones.

The second task is to increase labor productivity. Losses of working time are far from everything. In addition to these there is executive discipline, an economical attitude toward socialist property, creative initiative, enterprisingness, and the desire to search out and introduce into production everything that is new and advanced. It is not enough to force a person to remain at his work station from the beginning until the end of the shift. It is also necessary for him not to walk over parts that have been thrown on the floor and--even better--not to allow this to happen in the first place; the engineer must try to find the most effective planning decisions and the business executive must implement them. Increasing labor activity is also a most important prerequisite for accelerating scientific and technical progress.

Labor activity is becoming a most important factor in intensification. There was a time when it was possible to achieve rapid growth of the economy by enlisting masses of additional resources into the economy and concentrating

them in a limited number of decisive areas. This time has passed. All of the relatively easily accessible resources have already been drawn into the economy, and the mass of them is very great. The center of gravity is now shifting toward effective utilization of that which already exists. This cannot be achieved by concentration of resources alone. It is necessary to reach every individual and remove all barriers on the path to efficient management.

The third task is to strengthen and improve centralized planned management of the economy. It is no secret that now the central planning and economic agencies are far from always capable of doing away with departmental separation and overcoming local interests. One can assert that here too the reason lies to a considerable degree in the weakness of the economic levers that are applied and in the fact that they are not coordinated with the plan. To achieve effectiveness of economic stimuli and smooth and controlled action of these means to obtain the opportunity to control not by crude pressure, but, in the words of V. I. Lenin, by the soft wave of a conductor's baton. This also means strengthening true centralism--democratic centralism.

Proposals for improving planning and management should be directed toward carrying out these tasks. The key elements in the management mechanism are centralized planning, economic levers and stimuli, and organization of management. Even though there is a tradition of considering planning first as the core of the system of management, there is some point in beginning with questions of organization. The fact is that the functions of planning depend on the organization of management, and its methods depend on the economic mechanism.

#### Organization of Management

This is understood not simply as the organizational structure of management, but above all as the distribution of rights and responsibilities among the units of the economic system and the construction of interrelations among them.

As concerns the distribution of rights and responsibilities, it is necessary to shift the center of gravity for the adoption of the majority of detailed economic decisions to the level of the main cost-accounting [khozraschet] unit--the associations and enterprises--and to appreciably expand their independence, including their authority in the area of the formation of the production plan, the establishment of economic ties, prices and wages, and the distribution of income. The Gosplan now plans approximately 4,000 consolidated positions of products in physical terms. The ministries develop in detail the planned list of products to 40,000-50,000 positions. Gossnab, distributing the funds and loading the capacities, develops the orders to approximately 1 million positions of the specified products list. This is an immense amount of work which even technically involves complicated problems. The main ones are counting for public needs, mutual coordination of the decisions, and the shortage of time.

The Gosplan and the Gossnab and the ministries far from always know the real needs for products better than the enterprises do. Therefore in many cases the ministries make assignments for products for which there is no demand.

Here are some examples. In the first quarter of 1983 the RSFSR Ministry of Light and the Food Industry planned for the Moscow Zhenskaya Moda Association the output of silk blouses in a quantity of 9,500, and dresses made from domestic knitted fabric--5,400. There was no sales market for either of these items nor was there raw material for such volumes of production. The RSFSR Ministry of Light and the Food Industry continues to plan for the Leather Haberdashery Association the delivery of women's gloves which are already piling up in the trade warehouses of Moscow and other cities. For these they use leather which could be used to manufacture women's purses for which there is a great demand. But the plan does not envision an increase in their production. As a result, the ministry has been forced to adjust the plan: in the first-half year the plan was reduced by 8.5 billion rubles for 18 associations in Moscow.

When it is necessary to coordinate decisions in the area of production and supply with such a detailed products list areas of lack of coordination are inevitable. The enterprises demand: plan the products and give us the capital. But the Gossnab, for example, draws up the material balances for 18,000 consolidated positions, and it writes orders for 1 million positions. For each consolidated position in the balance there is an average of 500 concrete items.

In a case like this how does one achieve complete coordination of the ministry's assignments and the orders that are issued? They say that it is necessary to improve the work of planning and supply agencies and to increase their responsibility. True! But one should not be surprised at how relatively well these agencies--under current conditions, of course--are operating, and how relatively few mistakes they make? Here it is a matter not only and not so much of responsibility as of the policy itself. It must be changed!

It takes time to plan through the central agencies the production and distribution of products in a detailed products list. Applications for resources are submitted as early as April-May when one does not know what will have to be produced. Naturally, the applications are increased. And then by the beginning of the year the plan is approved on the national economic level. Only after this to they begin to inform the enterprises of it, and then comes the schedule of allocations, without which the process of planning cannot be considered complete. It continues until April. This means that for an entire quarter the enterprise operates practically blindly, according to a so-called advance schedule of allocations. Thus some part of the products that are produced turn out to be unnecessary. This in itself is enough to make one think about whether or not the policy that is currently in effect should be retained.

This policy also gives rise to more important, socioeconomic problems. These cannot be solved with computers. Still, it is impossible to utilize computers and mathematical methods effectively unless they are solved. For by taking on

responsibility for detailed planning of production and deliveries central and branch agencies remove these responsibilities from the enterprises and from the labor collectives. By distributing the funds they create in the latter a dependent attitude and the desire to obtain more and give less. The rights and responsibilities, the opportunity to directly influence their position themselves, through their work--these are indispensable conditions for high labor activity. If these conditions do not exist the people become the executors of others' decisions, passive observers of the mistakes that are made this way.

Hence it follows that the production plan for the associations (enterprises) should be formed centrally only to a certain degree--to different degrees in different branches. The rest of it should be handled by the enterprises themselves on the basis of direct economic ties. This already produces an appreciable expansion of independence. Correspondingly, in supply too the enterprises should have the opportunity to order raw materials, processed materials and equipment, entering into direct relations with the suppliers. Centralized capital distribution of material resources, it would seem, should be limited to a narrow group of especially important resources that are in short supply. At the same time it is necessary to take measures for strengthening the economic responsibility of the enterprises. It will be provided by complete cost accounting and an increase in the role of central planning agencies and a strengthening of the economic and other levers that are at their disposal. This will be discussed below.

What should be the principles for the organization of mutual relations among the units of the management structure? The main thing here, in our opinion, should be the principle of mutual material responsibility which is carried out both along the horizontal and along the vertical. As concerns the horizontal, we are speaking about the development of contractual relations and the strengthening of responsibility for meeting commitments that are made, right down to reimbursement for damages.

The situation is more complicated with respect to the "vertical," that is, with the interrelations between associations (enterprises) and the higher economic agencies. In this sphere the principle of administrative subordination is in effect, according to which only one of the parties--the lower one--bears material responsibility. It actually disposes of the resources, but it is obligated to be subordinate. The other party, having the rights of administrative management, does not and cannot bear material responsibility for the decisions that are made. This means that, say, a ministry is not responsible and cannot actually be responsible for damage that is caused by its incorrect decision. F. E. Dzerzhinskiy, when he was chairman of the VSNKh, persistently developed organizational forms which could counteract departmental administration. These were cost-accounting syndicates and shareholding societies which joined enterprises together economically and contractually, and not simply by administrative relations. In 1925 he wrote: "We are waging a battle against methods of bureaucratic regulation, that is, the regulation which requires that somebody sit here in the central agencies, write an order, distribute and decide who gets how much, and so forth."<sup>1</sup>

But are relations of mutual material responsibility possible between a ministry and an enterprise? Yes, they are possible. A certain amount of this kind of experience does exist; it has been accumulated, particularly, in Bulgaria. How can one organize such relations? Let us assume that the ministry does not manage the enterprise, but is responsible for providing the national economy with certain products. It draws up balances and issues assignments for the production, and it also establishes the prices for these products with the agreement of the State Committee for Prices. But assignments in physical terms cannot simply be "dropped down"; they are formulated in the form of state plan-orders with the conclusion of the corresponding agreement. According to the agreement the ministry makes a commitment and bears economic responsibility for their utilization. For example, if the planned products are not sold, the ministry must either purchase them or make reimbursement for the losses. The ministry must have the financial resources necessary for this. Now many people are speaking about the need to consolidate the ministries and reduce the number of main boards and all-union industrial associations. One can agree with such suggestions. But first it is necessary to solve the problem of what each unit of the management structure should do and how it should do it. If the principles and methods of management are not changed there is no point in talking about reducing the staff.

#### Economic Levers and Stimuli

These include primarily price setting, the system of wages and material incentives, finances and credit. All this taken together should be regulated in such a way as to provide for high labor activity and the coordination of the interests of all participants in public production.

Let us begin with price setting. For many years there has been the viewpoint according to which the price should take into account the useful effect of the product and the degree to which it is in short supply. Only then will it reflect the socially necessary production expenditures of labor and correctly orient the producers in the development of production and the consumers in the economizing on resources. And since the needs for production and resources in order to satisfy them are determined in the plan, since it is precisely here, as Marx said, that the useful effect of the products should be weighed and the rates of development of the branches determined, so the prices should ensue from the plan. Only then can they be called actually planned prices.

Unfortunately, today the majority of our prices reflect only current and then frequently only individual expenditures of the enterprises. The differences in the profitability of the products, as a rule, are not related to the measure of social need for them. Hence the inevitable differences between the "advantageous" and "disadvantageous" items. Prices are not neutral. If they do not stimulate the achievement of the goals of the plan this means that they are working against the plan. In spite of the appreciable need to increase the extraction of coal, for example, the price causes coal to be extracted at a loss. Even after the revision of prices in 1982 the situation did not change significantly. For each year of the 10th Five-Year the coal industry had an average loss of 680 million rubles. How does one coordinate this with the fact that the country needs coal? One of two things is true: either it

is not needed or the price has been set incorrectly, in opposition to economic laws. The State Committee for Prices has a multitude of justifications. They say that they have repeatedly raised prices for coal and it still is extracted at a loss. Wages have increased rapidly in the coal industry and it is difficult to find people who desire to work underground, and you cannot tempt everyone with wages. Conditions for mining are also deteriorating. A further increase in prices will lead to increased expenditures by other branches and, consequently, to the need to increase the prices in these branches as well. See how complicated everything is! If one listens to these conclusions it seems that there is no solution anywhere.

One must say that the people who have actually been setting the prices recently are actively criticizing the proposed measures for changing price setting, asserting in particular that they are not practical. Practicality in their understanding is not requiring serious work, which leaves the existing state of affairs unchanged. It turns out that it is practical to patch up the holes, but to take serious steps which require comprehensive restructuring of price setting in coordination with other units of the economic mechanism--is impractical. All that is left is to repeat the well-known idea that there is nothing more practical than a good theory.

Prices must be planned on the basis of socially necessary reproduction expenditures. Reproduction expenditures mean those which take into account capital investments in the development of production to the level of satisfaction of social needs, that is, what is necessary to the society and socially justified. Marx wrote in Volume 3 of "Das Kapital": "The value of any commodity...is determined not be the necessary working time which is included in it itself, but in the working time which is socially necessary for its reproduction."<sup>2</sup>

Let us come back to coal. With annual losses of 680 million rubles, during the 10th Five-Year Plan about 2 billion rubles' worth of capital investments were invested in this branch each year. This money was taken from the incomes of other branches, from the turnover tax. This means that coal is undervalued and the products of other branches are overvalued, as a result of which there arose a need for large-scale redistribution of incomes through the state budget. In 1980 alone industrial enterprises transferred 43.2 billion rubles from profit into the budget, and then from the budget they received 38.5 billion rubles. There was a revaluation, for example, in machine building, where the average annual profit under the 10th Five-Year Plan amounted to 20.3 billion rubles while capital investments here were at a level of about 11 billion rubles.<sup>3</sup>

In order for the price to play its role it is necessary to include in it profit in amounts that provide for capital investments which are sufficient for the planned growth of production. And the growth rate of production is the higher the more critical the need for the product and the greater its social usefulness.

According to our calculations, the prices for products of the fuel industry (under the conditions of the 10th Five-Year Plan) should have been increased by approximately 19 percent. But there should not have been any increase in

prices in industry as a whole, including in machine building. And in light industry, the food industry and the chemical industry the wholesale prices should have been reduced.

The degree of centralization of price setting should correspond to the degree of centralization of planning the production of products and the distribution of material resources. In practice central price-setting agencies can analyze with the proper depth 5,000-6,000 of the 10,000 drafts of prices. But the list of products includes about 24-25 million, and it is being rapidly updated. This means that in the majority of cases they approve what the producers suggest. How should we arrange control over these prices?

It seems that the prices for the most important kinds of products should be determined centrally, as a rule, in the five-year plan. This would be handled by the Gosplan, the ministries and the departments that develop material balances, with the participation of the State Committee for Prices. This is the framework of the price system. It would be enough for it to include prices for 20,000-30,000 kinds of products. And it would be better to establish the rest of the prices by agreement between the suppliers and consumers (contractual prices) according to the rules approved by the State Committee for Prices, of course. And it should exercise control over the observance of these and prevent undesirable tendencies in the dynamics of prices by applying economic sanctions.

In a certain sense price setting is a key unit of the economic mechanism for management, and it should be reliable. Without good prices complete cost accounting is unthinkable and it is impossible to have commensurability of expenditures and results or evaluation of the effectiveness of planning decisions.

The problem of payment for resources--labor, natural and fixed capital--touches upon questions of price setting. This has been discussed for a long time, many proposals have been adopted, and fairly good results have been produced. For example, in Kirghizia, where payment for water for irrigation needs has been introduced, the utilization of water resources has improved by 10 percent, the delivery of water for irrigation needs has increased by 180-200 million cubic meters a year, and 25 liters are saved out of each cubic meter of water.

But still they have not achieved complete satisfaction. It is not enough to introduce various payments and to make them recognized. It is also necessary to make them an effective stimulus for efficient utilization of resources, a factor in the creation for all enterprises of objectively equal economic starting conditions which motivate them to invest all efforts and all reserves both when the plans are being drawn up and when they are being carried out. And to do this it is necessary to plan the normatives for payments in coordination with the balances of the corresponding resources.

In the areas of wages and material incentives the main directions for restructuring have already been determined. They include coordinating payments with the final results of the work and the development of collective forms of organization and payment for labor. The two directions are

interconnected. The problem, however, is to move consistently and persistently to the point after which the expected effect is achieved. But to do this requires overcoming many obstacles and finding viable forms of planned regulation of the most complicated socioeconomic relations that which are associated with the labor activity of millions of workers. It is no secret that even with the high percentage of inclusion of workers in brigades, there are still very few full-fledged cost-accounting brigades in which the earnings are actually dependent on the labor contribution and stimulate its growth. And this should not be surprising. For in order to achieved actual dissemination of the experience of the leading collectives everywhere, it is necessary to seriously restructure planning, including intraplant planning, accounting, and supply, and to significantly raise the overall level of organization of production. One must not forget about the circumstance that with the existing forms of payment for labor and material incentives it is possible to earn the customary 200-250 rubles most frequently at the price of lesser efforts than in brigade cost accounting. The latter would make it possible to earn a good deal more, but the traditions of equalization are alive: as soon as there is an appreciable increase in the differentiation of earnings, even if it is in keeping with the results of labor, their misgivings begin: Is this allowable? It is necessary, however, to clarify once and for all that without this differentiation in objectively conditioned amounts there can be no discussion of increasing the effectiveness of economic stimuli or consistency in the realization of the principle of distribution according to labor.

It is also a matter of the fact that managers of associations (enterprises) were placed under conditions which forced them in their collectives to consistently realize this principle, to avoid exclusions, and to increase demandingness. The labor collectives should urge them toward improving the organization of production and updating technical equipment and technology. Sometimes an unspoken agreement is now achieved between the administration and the workers: the former "withhold" wages and are not too exacting when it comes to discipline, quality and protection of materials, and the latter are silent when they see a low level of organization. The harm from this is sustained by the state, by all of us. This means that it is necessary to preclude the possibility of this, to create a situation of mutual demandingness. And to do this it is necessary to make changes both in the wage rate system and in the system of bonuses. It is necessary to grant the managers of enterprises broad rights in evaluating labor and rewarding it, but under one condition: that everything comes from the money that is actually earned by the collective. Further, it is necessary to provide for actual participation of the labor collectives--from the brigade on up--in the management of production, above all in solving problems which directly touch upon their interests.

Here too the need for a comprehensive approach makes itself known forcibly. Everyone agrees that wages must be coordinated with the final results. But how does one measure them? In experiments which are now being conducted the results are evaluated by the indicator of the normative net output. It is better than points, but it is not irreproachable. It is best to introduce an indicator of actual net output, but to do this the prices must be different--they must be as shown above. All units of the management mechanism are

connected. And when one desires to increase labor activity and in order to do this to improve wages and material incentives, it is also necessary to see more remote factors: prices, supply, the balance of the consumer market, and many other things.

The mutual dependency of all units of the economic mechanism is perhaps most clearly revealed in the condition of the financial and credit system, in those problems that have to be solved in this area. The most difficult of them is the material and financial balance of the economy. It is a generally known phenomenon--the shortage both of consumer goods and of production resources, which cannot be eliminated even with an immense scale of production. And the reason for this which lies closest to the surface is that our enterprises are not experiencing a shortage of one thing--money. Let us look just a little deeper. We have already seen that the enterprises can pay unearned wages. It is possible, for example, in December to adjust the annual production plan in the direction of reduction, when the planned wage fund has already been spent and it is too late to adjust it.

Shortcomings in price setting lead to a situation where the financial results of the economic activity far from always bear witness to good or bad work. It would seem that surplus profit should be gathered and given to those who do not have enough money. For most frequently it can be proved that the shortage of money is not the fault of the enterprise. But such redistribution is certainly not without problems; it undermines the incentives for hard work and orients organizations toward asking for more and giving less. The effectiveness of financial and credit levers decreases. And, in the second place, an ever greater part of the national income is concentrated in the budget: the average annual growth rates of the budget income exceed the growth of product sales--three-fourfold. And a considerable proportion of the turnover tax and the deductions from profit go into the budget before the products are sold, in the planned sums, that is, this part of the budget income is not provided for materially; payments are made into the budget at the expense of the enterprises' circulating capital. A shortage of this leads to increased credit indebtedness and the enterprises are indebted to one another. In order not to break the chain of payments and to provide for continuous circulation of money, the bank is forced to increase loans, giving them without the proper backing. In the final analysis it ends up being the immediate source of surplus payment funds that go into the economy. Each loan is an emission, initially credit. But from it they pay wages, and this is then an emission of cash.

Hence follows the need to strengthen financial planning and to provide for authentic centralization of management of monetary circulation. The essence of the matter lies in planning not only physical indicators of output, but also forming the effective demand for them in a planned way, for the future. There is no need at all to concentrate more money in the budget. On the contrary, relying on a restructuring of the price system, one should limit the scope of redistribution processes, leaving a strictly determined group of expenditures for the budget. But it is necessary to plan, and for the future, the entire financial cycle and to activate the financial levers for increasing effectiveness.

It is necessary, further, to provide for the formation of budget income only from realized accumulations, and bank income--from economically correct sources. One cannot take deductions from profit, of which there is none so far, and of which there might not be any at all. By the same token credit, for example, long-term credit cannot be taken from the savings of the population, a goodly proportion of which is delayed unsatisfied demand. This money can be demanded at any moment, while money which is granted as credit for purposes of capital construction is taken out for extended periods of time.

Finally, it is necessary to significantly increase the role of the USSR Gosbank in the management of the national economy. It should bear a full measure of responsibility for the condition of monetary circulation in the country. And in conjunction with the Gosplan and the Ministry of Finance it should bear responsibility for the material and financial balance of the economy. To this end it is necessary to considerably strengthen cost accounting in bank institutions.

### Planning

Let us discuss only the main thing. It was noted above that there are serious discrepancies between the planning assignments and economic stimuli. In order for measures for improving the organizational and economic mechanisms to produce an effect, these discrepancies must be eliminated.

It is necessary to turn centralized planning around from a multitude of concrete decisions and physical indicators to the formation of conditions which direct the enterprises toward the achievement of the goals of the plan. The plan should form conditions of management in such a way that the enterprises are economically oriented toward nationwide interests. There is no doubt that this is a difficult task if only because we have no experience like this yet, but the task can be carried out.

The main instrument in the formation of these conditions for management, which would orient all units of the economy to work for nationwide interests, should be the system of planning economic normatives. The first steps in their formation have already been taken in the well-known decrees of the CPSU Central Committee and the USSR Council of Ministers of 1979 and 1983. Now it is necessary to proceed further. Let us list the main economic normatives:

prices for the most important kinds of products;

normatives for the payment for labor;

the normative for the effectiveness of capital investments;

normatives for payment for production capital and labor and natural resources;

rates for bank interest; normatives for the distribution of net profit and the formation of cost-accounting capital.

Work on the methods for planning these normatives is now in progress. An important step in this matter is the comprehensive set of methods for evaluating the effectiveness of economic measures. In addition to the normatives, in our view, it is necessary to retain as directives a number of volume indicators such, for example, as the assignments for production in physical terms (in the form of state plan-orders), the limits for the most important kinds of resources (including for state capital investments), and the assignments for science and technology.

Let us now look at the price as an example of an approach to planning economic normatives. Say, for example, that the planned increase in the production of products during the five-year plan is earmarked in the amount of 100,000 units. The proportional capital investments per unit amount to 50 rubles. This means that the overall demand for capital investments for the planned increase is 5 million rubles. Let us say, further, that during the five-year plan as a whole it is planned to produce an amount of 1 million units. The planned outlays for the production of each unit are determined in the amount of 10 rubles. We are suggesting that the profit be included in the composition of the price, roughly speaking, in an amount that is equal to the volume of the planned capital investments per unit of output for the planned period. In the example this amount will be equal to 5 million rubles: 1 million times 5 rubles. It is also necessary to take into account the amounts of economic incentive funds that have been formed in the branch and thus to create stimuli for investments in the development of production. Let us say that this produces another ruble in addition to the 5 rubles. Then the planned price will be  $10 + 5 + 1 = 16$  rubles per unit. By selling the products at this price the producers will receive earnings that are adequate to cover expenses and to finance capital investments for the planned increase in production. It is not so difficult to use this method to calculate the prices of the most important kinds of products during the process of the development of the plan. For material balances are developed, capital investments are determined, and production outlays are planned.

We shall not go into detail but it is important to note that this price makes the products which the national economy needs most the advantageous ones. At the same time it provides incentive for economizing on resources that are in short supply. In other words, it will work for the coordination of interests.

And the bottom line. With this method it is necessary to establish the prices for all products which are planned and distributed centrally because now any reduction of the list of these products will come up against resistance. The consumers and planners will be the first to object. As a result, the products list will grow. While the inclusion of a product in the planned products list, as a rule, involves also the establishment of a higher price, this will create a guarantee against its expansion, and also against increased orders.

In this article we have considered only the principal aspects of the restructuring of the mechanism for managing the economy. Understandably, when one discusses the most complicated socioeconomic problems it is necessary to have in-depth scientific substantiation and an overall concept of the restructuring of the management mechanism and the system of concrete measures. Haste cannot be allowed in such matters. Everything must be carefully weighed

and checked. But it is also inadmissible to postpone the solutions to these problems.

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## SIGNIFICANCE OF SHORTAGES IN ECONOMY DISCUSSED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 12, Dec 84 pp 21-31

[Article by K. A. Ulybin, candidate of economic sciences, head of the department of political economics of the Moscow Higher Police School: "Shortages and the Interaction of Partners"]

[Text] At the December (1983) Plenum of the CPSU Central Committee special attention was devoted to the achievement of greater balance in the economy, and the task was set "to eliminate the shortage both of goods and of services."

The problem of shortages is multifaceted. Its discussion was begun in EKO (No 2, 1982) by V. D. Belkin in the article entitled "Commodity-Monetary Balance, Its Role and Problems of Providing It" and V. I. Zorkal'tsev--"The Anatomy of a Shortage," which was continued in Issue No 11 for 1982, and P. G. Bunich in the article entitled "Only Efficiency Will Conquer the Shortage." Today K. A. Ulybin turns again to one of the reasons for shortages--the inadequately arranged interrelations between producers and consumers.

The main reason for a shortage frequently, because of inertia, is looked for in the inadequate volumes of the production of products. This explanation has become outdated. About 30 years ago there was not enough metal in general, but today there is a shortage of quite particular economical and high-quality kinds of it. The same thing can be said about consumer goods. There are many goods in the stores, but there is a clear shortage of those that are fashionable, modern and inexpensive. Today one sometimes finds on the counter what was in short supply yesterday, and tomorrow we will apparently obtain what we need today.

Each year 3-4 billion rubles' worth of unmarketable goods remain in retail trade. Commodity supplies there reached 68 billion rubles in 1982, exceeding the 1970 level almost two-fold. Many goods, if they are purchased at all, are purchased mainly because there is no selection. It is difficult to say

precisely what part of retail commodity turnover, which amounts to more than 300 billion rubles, involves goods for which there is no demand and which are purchased because there is no selection, but it seems that this runs into the billions of rubles.

In 1983 trade organizations at industrial trade fairs refused to purchase 1.2 billion rubles' worth of textile items, sewn items--600 million rubles, footwear--200 million rubles and durable goods--more than 2 billion rubles,<sup>1</sup> since they did not meet the demands of the consumers.

Specialists attribute a certain part of the population's deposits in savings accounts, which amounted to 186 billion rubles in 1983, to unsatisfied demand (the rest is attributed to delayed demand). By the beginning of 1980, according to some estimates, it was equal to approximately 28-30 billion rubles.<sup>2</sup> One can assume that the amount of unsatisfied demand is now closer to 50 billion rubles.

Each year the shortage of products for production purposes in keeping with agreements amounts to 15-17 billion rubles.<sup>3</sup> At the same time there is perhaps a no smaller sum of illegal products that are produced. But this is only the tip of the iceberg since many goods which the consumers desire are not included in the agreements at all because of various factors. In turn, some of the deliveries that are not envisioned by the plan are credited for its fulfillment because of the insistent demands of the suppliers.

Such situations cannot be written off as a shortage of resources or production capacities. This is a matter of something else, in our opinion--a matter of the poor adjustment of the mechanism of interaction between producers and consumers.

With extensive development of the national economy there is a predictable formation of a kind of cult of producers since the production volumes increase almost at any price, the problem of sales does not arise, and there is an immense demand for everything.... The dominance of the suppliers frequently enables them to produce and sell products which are not the ones the society needs, but those which are convenient and advantageous for the suppliers themselves. And the consumer is frequently powerless and has to accept what is given to him. Otherwise the consumer may not even be able to have what is offered. The consumer will put away a good deal of products for the future if only he can get them.

The dictatorship of the producers is also manifested in increased prices per unit of useful effect (this indicator for many kinds of technical equipment in domestic production increased by an average of 15 percent during the 10th Five-Year Plan<sup>4</sup>) and sometimes in the poor quality of the products that are produced. The priority role of the supplier weakens his responsibility for the fate of his brainchild. How do the machines which they produce operate, are they convenient to operate and service, are they provided with spare parts and do they produce a high economic effect? After the products are sold such questions rarely bother the producers. The solution to these problems is frequently shifted to the shoulders of the users, which gives rise to a desire in the enterprises to establish in-kind management.

The true position of the producers is expressed quite clearly in the existing policy of guaranteed sales of their products (for funds and orders). As a result, many products remain in the warehouses. According to the author's calculations, to maintain the increase in the level of supplies of commodity and material values in the national economy in 1982 as compared to 1975 an additional 54 billion rubles were spent. A certain part of this immense sum is attributed to inactive values, which have essentially been withdrawn from economic circulation. The losses are apparently considerably greater than the possible expenditures on improving material and technical supply.

#### New Interrelations Among Partners

The 26th CPSU Congress made an appeal "to approve the forms of cost-accounting relations and mutual economic incentives and responsibility for the fulfillment of planned assignments and contractual commitments between suppliers and consumers, and also clients and contractors."<sup>5</sup>

In our opinion, it is necessary to provide with the clients with a reliable guarantee of their right to acquire the products they need. Certain measures have already been taken. Thus the head ministries are now obliged to coordinate the plans for the creation and production of new technical equipment with the main consumers of it. A decision has been made concerning the development of a list of products which are to be produced. This list will be developed by the departments that are involved in conjunction with Gosstab agencies. But, unfortunately, this work is not being conducted actively everywhere. It seems that it would be appropriate for the ministries and associations on the eve of the next five-year plan to produce a developed catalogue of products used in production, which would inform the consumers and would serve as a basis for concluding agreements.

As practice shows, under various pretexts the producers frequently deviate from the output of products that are inconvenient for them which are envisioned by the aforementioned lists, and they bear practically no responsibility for this. A plan with undistributed goods is now becoming an extremely crucial problem for the clients. For example, at the beginning of 1982 the trade organizations were unable to place about 1 billion rubles' worth of products in light industry in keeping with that year's plan.<sup>6</sup> Here economic sanctions should be envisioned. For instance, for an unjustified refusal to accept products that are envisioned in the list the enterprise should be fined in the amount of 10-20 percent of the value of the products. The suppliers will begin to take a more attentive attitude toward the needs of the clients.

The normatives for updating products which will introduced in 1986 in keeping with the decree of the CPSU Central Committee and the USSR Council of Ministers (1983), "On Measures for Accelerating Scientific and Technical Progress in the National Economy," are directed toward this. On the basis of these assignments will be determined for the output of new items and for the removal of outdated ones. Thus the suppliers will be forced to update the products more quickly, which will facilitate the ordering of progressive kinds of products. But here it is necessary to avoid encumbering the consumers with

more costly items with clearly superfluous consumer qualities under the guise of new products. The Ministry of the Machine Tool and Tool Building Industry, for example, instead of the relatively inexpensive and convenient 675P milling machine began to produce a more complicated model which was 2.5 times more expensive and which far from everyone needed.<sup>7</sup> Both the consumers and the society as a whole stood to lose from such a one-sided decision.

In addition to this, in order to increase the role of the consumers it would be desirable to offer them greater possibilities of selecting their suppliers, and also the right to reject them if necessary. Then the demand could be related to the formation of prices. For example, the enterprises would sell products that were in increased demand at prices that were 5-10 percent higher, having come to an agreement with the consumers beforehand and having coordinated the issue with financial agencies. Products for which there is no demand, in turn, would go at reduced prices. Thus the opinion of the clients when selecting suppliers would acquire economic force and it would be difficult to underestimate and ignore them.

It would not hurt to increase control over the substantiation of the prices that are established. A selective check of 30 enterprises of the Ministry of Chemical and Petroleum Machine Building showed that the prices had been increased by 1 million rubles.<sup>8</sup> The profitability of certain kinds of products of this ministry exceeded the normative two-threefold. A widespread calculation of the prices on the basis of individual expenditures and per unit of item leads to a situation where the incomes of the enterprises are formed more rapidly than are the actual goods offered by these enterprises to the society. During 1965-1980, with a 2.7-fold increase in production volumes in industry, the residual monetary funds in the accounts of the enterprises increased ninefold.<sup>9</sup>

One of the solutions lies in increasing price discipline. Now if it is discovered that a price has been increased, the corresponding sum is deposited in the state budget. It seems that it should be increased three-fivefold. Moreover, in certain socialist countries unjustifiably increasing the prices is regarded as an economic disservice with all of the consequences that ensue. Perhaps it is time for us to be stricter in dealing with this phenomenon?

It would be expedient to form prices on the basis of public expenditures and to insist that they be formed per unit of consumer value, taking into account the planned reduction of the price of the products. Then the monetary incomes of the enterprises would be proportional to the effect offered to the society, the disparity between supply and demand would be eliminated, and goods which are identical in price and purpose but significantly different in terms of quality, reliability, aesthetic appearance and other consumer qualities would disappear from the counters.

At the same time, instead of sales with fixed supplies, it is important to essentially expand the free sales of means of production through territorial material and technical supply agencies, which now still operate most frequently only as transshipment points in the movement of products from the producers to the consumers.

The possibilities of active influence by the consumers on the producers are largely limited because of the fact that the obligations of the latter end with the sale of the products. This is hardly correct. For in the sphere of sales it is still too early to make a final judgment about how many products that are necessary for the society have been produced. It is necessary to have final accounting between the partners, taking into account the results of the consumption of the goods. It would be good to make only partial payment for the products at the time of the sale. Obviously the producers should take responsibility for more clear-cut commitments to adjust and replace products and to service them and provide them with spare parts. Other solutions are also possible. But it is important for the producers to be fully responsible for their work. The Orsha sewing workers have accumulated interesting experience in this area. In their agreements with their trade partners they include this point: if 30 percent and more of the items of any model are not sold within 8 months the trade organization has the right to return them to the factory which is obligated to replace the products on the spot. All expenditures for replacing and subsequently selling the items that have been returned are the responsibility of the factory.<sup>10</sup>

#### Precise Selection of Reference Points

In overcoming various forms of shortage it is important to have a precise orientation of the producers, which cannot be achieved without correct criteria for evaluating their work. The main one of these at practically all levels of management is still the volume of products produced, which is in principle incorrect. The volume of production and sales of products, important and necessary as they are, are an intermediate indicator from the standpoint of the final goals of the society. Large volumes do not always indicate better satisfaction of demands. Our footwear industry, for example, although it produces more leather footwear than do the largest producers in the world (370 million pair in 1982) nonetheless does not do the best possible job of satisfying the demands of the population.

The main criterion by which producers should evaluate their work is the degree to which the branch satisfies the constantly growing public demands.

It would be quite justified if not for all, at least for many ministries and associations to establish in the five-year and annual plans concrete assignments for raising the level of satisfaction of the demands of the society for one product or another. The corresponding experiment was conducted under the 10th Five-Year Plan in the Ministry of Agricultural Machine Building. The experiment in the trade organizations (beginning in 1980) showed that the indicator of the degree of satisfaction of consumer demand is more effective than that of commodity turnover.<sup>11</sup>

In keeping with the instructions that are in effect, the maximum amount of underfulfillment of commitments according to agreements is established for the enterprises in the amount of 1-2 percent (as an exception--3 percent). If the agreement is not fulfilled in an amount that is less than the established limit, the workers are still awarded bonuses. This indicator has turned out to be a kind of "I Spy" game for shady suppliers. Many ministries have turned exceptions into the rule, establishing the limit of underfulfillment of

agreements in the amount of 3 percent for almost half of the enterprises. But the main thing is that in this 2-3 percent there are great delivery shortages formed by the end of the year. In the country as a whole they exceed 15 billion rubles. Delivery shortages severely affect the economy. Moreover, the very fact that bonuses are awarded for incomplete fulfillment of orders has undesirable moral consequences. If bonuses are awarded for a failure to fulfill the plan, this means that it is permissible to work this way! Material stimulation operate at the same time with moral stimuli. And it is still more correct to pay bonuses only for 100-percent fulfillment of agreements.

The policy for determining the percentage of delivery shortages also leaves loopholes for negligent managers: the sum of delivery shortages taken as a running total from the beginning of the year is divided by the volume of products sold, which is also determined as a running total. For instance, according to the plan in the first and second quarters the volume of products sold amounts to 100,000 rubles each, and the delivery shortages--2,000 rubles in each quarter. Let us consider a case in which the delivery shortages of the first quarter are already eliminated in the second quarter. Let us calculate the percentage of failure to fulfill commitments for the first and second quarters:  $2:100 = 2$  and  $2:(100+100) = 1$ .

If these calculations are continued until the fourth quarter it becomes clear that failure to make deliveries in an amount of 2,000 rubles will produce only a 0.5 percent underfulfillment by the end of the year [ $2:(100+100+100+100)$ ]. Hence it is understandable why many large and important deliveries are left until the end of the year.

Another method of calculating is now more expedient: the sum of delivery shortages, of course, should be determined by a running total, but it should be related to the planned volume of sales of each report.<sup>12</sup> There is a dual advantage. First, there will be equal responsibility for the same volumes of delivery shortages and there will no longer be any point in putting things off until the end of the year. Second, it will be disadvantageous to retain products that have not been delivered within the planned time period. Why? For instance, delivery shortages for the first quarter have not been made up in the second quarter, and then according to the new calculation the underfulfillment of contracts in the second quarter will amount not to 1 percent as before, but 4 percent:  $[(2+2):100]$ . Of course there is not a single enterprises which will not try to avoid this.

Another aspect of the imperfection of the accepted policy for calculations is that it is carried out by the "boiler method," whereby all the delivery shortages are totaled up in value form. As a result, the so-called trivia--orders that are small in monetary terms--are lost in the overall sum. This gives rise to a negligent attitude toward them on the part of the suppliers. But from the position of the clients there are no trivia. For instance the failure to deliver a bearing worth 5 rubles can hold up the prompt output of a machine which costs several thousand rubles. In order to overcome this shortcoming some scientists are justifiably proposing that the percentage of fulfillment of deliveries be determined for each position of the agreement, and the level of fulfillment of the agreement should be calculated by relating

the total of the percentages of fulfillment for each position to the overall number.<sup>13</sup> Let us say that an agreement has five positions for deliveries, for which the plan was fulfilled by 95, 100, 97, 98 and 99 percent, respectively. The overall percentage of fulfillment is equal to 97.8 percent. Thus the importance of the fulfillment of each delivery will be the same.

#### By Improving Planning

Plans are now beginning to be developed for the same time periods in various branches of production. But from the standpoint of the interaction between the producers and the consumers, apparently, this policy should be changed, that is, one should begin with branches that produce the final product. For example, on the basis of the needs of the population trade distributes its orders, which serve as a basis for the allotment of resources and the determination of the production volumes in group B, and so forth. Now frequently during planning the producer branches receive resources and assignments for production earlier than the consumer branches do. This impedes the achievement of balance in the system of public demands.

The products list is an important instrument for maintaining balance. But a products list which is planned from above frequently reflects yesterday's tendencies to a considerable degree. But the enterprises must produce today's products and with a view to the future.

It seems that it would be expedient to devote more attention not to a detailed products list, but to substantiated production and economic ties among enterprises. If the enterprises are surrounded by an atmosphere of high economic tension, then by regulating their ties it is possible to influence proportionality successfully. Then the question of what should be produced and when can be resolved by the partners themselves quickly, efficiently and taking into account the changing circumstances. This will undoubtedly give the economy greater flexibility. Such an approach also corresponds to the course conducted by the party toward increasing the independence of the associations and enterprises.

Balancing production with demands depends directly on the indicators that are adopted in planning practice. Many physical indicators, expressed in tons, meters, pieces and so forth, sometimes give a "gross" orientation to no less a degree than value indicators do. The fact is that they reflect mainly physical and not consumer qualities of the products. Therefore frequently the output of products in tons, meters and pieces increases considerably more rapidly than does the degree of satisfaction of the demands. According to the author's calculations, during the 1970's the production of raw cotton in tons increased 1.5-fold, and cotton fabric increased by only 15 percent. The situation is similar with respect to the production of sugar beets and the output of sugar from them. It is desirable to plan the activity of enterprises in indicators that directly reflect the consumer qualities of the products. And we already have experience in this. For example, the production of lead accumulator batteries is planned not in tons as before, but in ampere-hours. For the second year metallurgists are determining assignments in conventional tons which reflect more precisely the consumer qualities of the metal items. The "set" indicator is being used more and more

extensively. Such changes have been made in physical measurements for other kinds of machine-building products as well. But the scope of this work is still inadequate. Many branches are not actively involved in this important matter.

It was noted at the 26th CPSU Congress that the initial and final points of the party's economic policy are concerned for the needs and demands of specific people. And planning as the leading unit in the implementation of the economic policy should proceed from the needs of the members of the society. It would be desirable to coordinate everything else with it. If this approach is consistently realized in each section of the plan, perhaps we would naturally cease to produce unnecessary products which impede the achievement of balance.

#### FOOTNOTES

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## EXPANSION OF RIGHTS OF SOCIALIST ENTERPRISES DISCUSSED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 12, Dec 84 pp 33-72

[Round-table discussion: "Independence: Ideas and Embodiment"]

[Text] In the materials of the November (1982) Plenum of the CPSU Central Committee a great deal of attention was devoted to improving the mechanism for management, particularly to the expansion of the rights of socialist cost-accounting enterprises with a simultaneous increase in their responsibility for the results of their work. During the time that has passed since the plenum certain practical steps have been taken. In July 1983 we published the decree of the CPSU Central Committee and the USSR Council of Ministers on conducting an economic experiment beginning 1 January 1984 in a number of branches of the national economy involving expansion of the economic independence of the enterprises and strengthening of their responsibility for the results of their management.

In the meeting with the electorate of the Kuybyshev Electoral District of Moscow General Secretary of the CPSU Central Committee K. U. Chernenko said: "The forms of management...should meet modern requirements. A number of economic experiments which are now being conducted will undoubtedly contribute to this. Their essence lies in granting greater rights to enterprises, increasing their responsibility and relieving them of superfluous red tape from the central agencies. Experimental testing will make it possible to advance from the stage of research to confident movement forward. But, of course...search and introduction of the new should not just take place at enterprises that in involved in one experiment or another.

"For example, it is obvious to everyone that it is necessary to cover the distance to the introduction of cost-accounting fundamentals everywhere. It is necessary to eliminate everything that impedes this." It was

precisely in this direction that the Politburo of the CPSU Central Committee in a meeting in August of this year envisioned expansion of the economic independence of the industrial enterprise.

At the request of managers of industrial enterprises in Novosibirsk, the subject was brought up for discussion in the EKO Club of Directors, which has been organized within the framework of the scientific and economics society. (For more detail concerning this club see EKO, No 5, 1984.) Two meetings were held at which this subject was discussed. In the first, which was held at the end of 1983, they considered more general issues; the second was devoted to the first results of the economic experiment and its problems.

Participating in the discussion were managers and specialists of industrial enterprises: V. A. Aranovskiy, V. F. Brenno, S. S. Gorbenko, N. V. Yevdokimov, V. G. Zav'yalov, S. M. Zverev, Yu. M. Kiselev, G. Ye. Kolonda, Zh. F. Kryuchkov, G. I. Loginov, N. D. Matveyev, V. P. Mukha, G. N. Pervushov, G. A. Pimenov, B. V. Prilepskiy, I. M. Selivanov, V. I. Stoyanov, Yu. I. Tychkov, N. A. Ustinov, V. V. Shalimov and Yu. G. Shelyukhin. Among the participants in the discussion were Doctor of Economic Sciences, sector chief of the Institute of Economics and Organization of Industrial Production of the Siberian Branch of the USSR Academy of Sciences, Prof R. G. Karagedov, the manager of the Novosibirsk office of the USSR Gosbank, V. I. Cheplakov, the deputy chief of the Western Siberian Glavsnab, I. G. Dubovskiy and economists of Novosibirsk industrial enterprises.

The discussions were conducted by the magazine's editor in chief Academician A. G. Aganbegyan.

Today we are offering for the readers' attention an abbreviated transcript of the conversations in the Novosibirsk directors' club.

#### A Radical Issue--Optimal Combination of Centralization and Independence

EKO: The primary and fundamental unit of our economy is the industrial enterprise or the association. We should like to know the opinion of the enterprise managers who are present here as to what the radical issue is in improving the economic mechanism.

Yu. I. Tychkov: Actually, all material goods of the society are created at enterprises. And the result of the functioning of the national economy depends essentially on how independent they are and the degree to which their managers are able to display initiative. Therefore special attention, including from science, should always be trained on the enterprise. We should

like for science in the foreseeable future to do a time and motion study of how an enterprise operates, under what conditions a manager makes a decision, and what needs to be changed in order for the collective to be interested in effective utilization of resources which are allotted to them by the state. It seems that the solution to this problem should also take into account the specific features of the branch: what is good for heavy machine-building plants, for example, can be less than the best solution for factories that process agricultural raw material. A careful scientific study and a generalization of the practice in the activity of leading enterprises of various branches of the national economy, and the disclosure and clear-cut formulation of the factors that limit their activity--herein lies the approach to problems of the independence of enterprises. This is the radical issue. It is especially important to study this now, under the conditions of the economic experiment that is being conducted in the country for expanding the rights and increasing the responsibilities of industrial enterprises, since the results of this large-scale experiment will be used for preparing general decisions concerning improvement of the economic mechanism.

G. I. Loginov: The provisions concerning the socialist state production enterprise determines that its activity is arranged on a combination of centralized management and economic independence and initiative for the enterprise. It would seem that everything is concrete and simple. But this is only the way it seems. Throughout the past 2 decades several normative acts have been adopted which regulate the interrelations between the enterprises and the system of the national economy and its economic activity. But the optimal combination of centralized management and economic independence of the enterprise has not yet been achieved. We should like to know the opinion of economists regarding this issue.

R. G. Karagedov: Our system of economic management took form under specific conditions: the first socialist state in the world, the civil war, foreign intervention, and the difficult tasks of creating a principally new socialist system of economy and a new system of management. All these specific features also predetermined the type of economic mechanism. It is characterized by a high degree of centralization of economic decisions, which has been historically justified.

But a lot of time has passed since then. We are no longer a backward state, but a powerful industrially developed state, and we are no longer isolated in the world arena. But the management system has largely retained its old features which were formed at the end of the 1920's and the beginning of the 1930's. And we are experiencing this lack of correspondence more and more.

I would associate many of the shortcomings of the existing economic mechanism with the lack of a sufficiently developed theory. We have a great deal of practical experience but we still need to work on a theory of management of the socialist national economy.

The economic mechanism of our country, like that of the entire group of socialist countries (the GDR, Czechoslovakia, Romania, Poland and Bulgaria) is characterized by a high degree of centralization of decision-making. Related to this is the branch principle of planning and management, directive planning

and the corresponding limited independence of the enterprises. It is quite clear that there is now a movement in the direction of greater decentralization of management and greater independence of the enterprises.

Question: How do you envision decentralization in management?

R. G. Karagedov: I think that now it would be reasonable to suggest a main formula for our economic mechanism: radical measures for strengthening economic independence of production associations (enterprises) with all the consequences that ensue from this. If the position of the main, primary unit of production--the cost-accounting enterprise--does not change, then it is difficult to expect essential progress in the effectiveness of the system of management of the economy. There are, of course, areas of economic management where we cannot grant the enterprises independence, and this is obvious. Modern large-scale production, with its immense scope, requires gigantic expenditures on capital investments and scientific research, which determine the future image of production. Here also the market mechanism, which presupposes extensive economic independence of the producers, turns out to be powerless. It is necessary to have a centralized system of management and centralized strategic decisions: concerning the rates and basic proportions of the development of public production, concerning the ratio between accumulation and consumption, and many other things. Questions of creating a production and social infrastructure, the country's defense, foreign state commitments--the list of functions of centralized management could be continued. But at the same time it is clear that there remains a broad area of other economic decisions which can be decentralized and, in my opinion, it is very important to do so.

So to your question I can answer this way: strengthening cost accounting, in my opinion, presupposes first of all expansion of the economic rights of the enterprises. This is precisely the main thing in cost accounting, and all the other indicators are production indicators.

S. M. Zverev: I wish to give one of the examples of how the economic mechanism functions in light industry and what the consequences of excessive centralization of decisions are.

In 1983 we learned that at the Tomsk Plant for Rubber Footwear of the USSR Ministry of the Chemical and Petrochemical Industry there is technological equipment for producing athletic shoes. With this equipment they could make press-forms, and this is the main difficulty when manufacturing polyurethane soles. But they do not have the leather for producing athletic shoes. We, conversely, do have the leather, but we do not have the devices for stamping the press-forms. We went to the plant director with a suggestion to cooperate: we will provide the tops made of our leather and you make the polyurethane sole for them. We will divide the products in half since we are making them for the same base of Rosobuv'torg. In order for this not to seem adventurous, we supported our proposals with calculations. We held a lot of discussions. We decided that we would rent their equipment since it was not being used and would enlist the workers on the roles of our plant as workers who combine occupations. But Gosplan specialists were categorically against this since they think that the Tomsk Plant should make only rubber footwear

(in keeping with the department to which it belongs) and the footwear association should make only leather footwear. Nonetheless we managed to produce a small number of athletic shoes, but there could be no mention of stable production of them. And all this simply because specialists of the two branches could not agree among themselves. And you all know the demand for athletic shoes....

I. M. Selivanov: The stability of the modern enterprise rests on three or four foundations. It seems that these would include the existence of a plan which is supported with funds, capital construction, stable norms for the formation of funds and price setting. In any case for nonferrous metallurgy enterprises, which I am representing here today, these are the fundamental ones. For about 2 years after 1979 the norms were more stable, but now they are frequently adjusted in the direction of reduction even when high technical and economic indicators are achieved. Thus we have no great interest in above-plan profit.

In essence, we have no long-range plans for the next 5 years and we do not even have firm annual plans for work. In general this deprives the enterprise of independence. For example, in 1983 and 1984 our combine received a plan which was not supported with raw material.

A. G. Aganbegyan: Let us sum up the preliminary results of the consideration of this issue. Here we have raised the cardinal question of the combination of centralization and independence of the enterprises. Indeed, at the basis should be the well-known Leninist principle for constructing the economic mechanism--the principle of democratic centralism in the broad sense of the word. Let us assume that the main board is hampering your activity with a lot of red tape in order to reinforce its own position, to demonstrate its power and to achieve some of its own goals. Can we call this centralization?

First and foremost one should understand centralization in the broad sense of the word to be following the statewide line because centralization is a national economic category, a category of national economic interests. But in order to strengthen centralization it is necessary to improve the work of the middle unit--the ministries, main boards and all kinds of functional agencies which do not always successfully defend statewide interests. If the question is raised in this way, apparently the real tendency of the economic mechanism should consist in strengthening statewide centralization in counterbalance to departmental centralization (or petty supervision) in counterbalance to the functional interests of individual agencies which are trying to strengthen their own positions.

Now about cost accounting. What does complete cost accounting mean? That you cover your expenditures with income. And not only current expenditures which are related to the production of products, but also those that are related to the expansion of production, its modernization and so forth. Probably all enterprises should be changed over to complete cost accounting. Then relatively large associations (such as the VAZ) should have greater rights, for example, the right to enter the world market. They should also be given additional benefits for long-term credit.

Of course the important and most complicated issues are wages and material incentives. Independence should be reinforced materially. This is a complex aspect. One can make payment from the wage fund, and then pay additional amounts from the profit. But only 5-10 percent remain for this at best. Therefore it is as though the individual receives his basic wage simply for being present at work. A more radical system is related to incentives related to the gross income. We have experience in this in our country. The enterprise receives income and then makes deductions for material expenditures and amortization, settles accounts with the state and the bank, and so forth. And the rest is distributed among those who produce the products. But these issues require special consideration.

#### The Large-Scale Economic Experiment: A Look Within

A. G. Aganbegyan: As you all know, comrades, the party Central Committee and the state government is now completely and in the most serious way engaging in the development of proposals for improving the economic mechanism. This is shown by a number of experiments which are being conducted in our country. Let us recall a couple of them. The experiment for introducing collective forms of organization and payment for labor, including at enterprises of Novosibirsk. The Leningrad experiment is being conducted for increasing the effectiveness of the work of design and technological organizations. An experiment is in progress for improving the work in the sphere of services. In Georgia the management of an agroindustrial complex has been arranged in a new way. There is a very interesting experiment in Poti in organizing cost-accounting territorial associations. The Ministry of Construction for the Petroleum and Gas Industry is carrying out a changeover to the collective contract for comprehensive technological flow lines. An experiment is being started in improving the system of management in a number of construction organizations. In brief, we are faced with intensive purposive work.

Therefore positive experience in improving the economic mechanism is of special interest. And an excellent occasion for extensive discussion in this area is provided to us by the large-scale experiment in expanding the rights of socialist industrial enterprises and increasing their responsibility for the results of their economic activity, which is being conducted in 1984 in five branches of industry. These include the USSR Ministry of the Electrical Equipment Industry, the USSR Ministry of Heavy and Transport Machine Building, the Ukrainian SSR Ministry of the Food Industry, the Belorussian SSR Ministry of Light Industry, and the Lithuanian SSR Ministry of Local Industry.

How did these five branches operate during the first half-year? Three branches--the Ukrainian Ministry of the Food Industry, the Belorussian Ministry of Light Industry and the Lithuanian Ministry of Local Industry--fulfilled the plans for sales, taking into account deliveries, by 100 percent. Their rates of growth of labor productivity were higher than they were in the branch as a whole. Great difficulties were experienced by enterprises and large associations of the Ministry of Heavy Machine Building and of the Electrical Equipment Industry which received their production plans late. These ministries fulfilled the plan for deliveries under agreements by 99.5 percent. There was a certain reduction in the number of industrial production personnel. The growth rates of labor productivity increased, that is, the

results on the whole were good. The question was how they were achieved. For we all know that the financing of these branches and their material and technical supply were improved somewhat.

In Novosibirsk three associations are operating under the conditions of the experiment: Sibelektroterm, Sibelektrotyazhmash and Elektroagregat.

We have been working in the new way for about a year. It is already possible to sum up the preliminary results. Additionally, at enterprises that are participating in the experiment they have conducted preparatory work and passed through the cycle of planning for 1985. Therefore it would be interesting to us to hear from the managers of these enterprises.

"A changeover to work under the new conditions cannot take place formally, without special preparation."

I. S. Stepanov, head economist of the Elektroagregat Association: When changing over to the experiment, we had to solve two problems first of all: the first--to convince the workers and engineering and technical personnel of the need for changes and of their irreversibility; and the second--to restructure the system of management within the enterprise in such a way that it was directed toward the fulfillment of contractual commitments.

It should not be thought that the first area of the work was easier than the second. We encountered and even now we continue to encounter indifference even on the part of certain foremen and chiefs of shops and services. People have become accustomed to working in the old way and therefore the rigid requirement placed on the shops to fulfill the plan through manufacturing only those products that are on their list and are needed in order to fulfill the contractual commitments of the enterprise is given a hostile reception by some and comes up against a certain "psychological barrier." It is necessary again and again to convince both workers and line managers that there will be no return to the past, that the fulfillment of the contractual commitments is our duty, and that they should expect no easing up in this matter.

The collection of methodological instructions that was prepared in the ministry have helped us. It was analyzed by the general board of directors and in the main functional divisions. An order was issued with an appendix of a plan for concrete measures. We have created a commission for conducting the experiment, organized the training of engineering and technical personnel and employees, as well as party and trade union activists, and we have conducted meetings in the labor collectives. A series of materials on the experiment has been published in the plant newspaper. We have developed new intraplant documents. Above all, we have made additions to the cost-accounting provisions for the shops and divisions. They regulate informing the workers of the main evaluation and calculation indicators. The number of indicators for the production units was reduced. There are now four main evaluation indicators for the shops: the production of products and physical terms; the reduction of expenditures per ruble of commercial output; the growth of labor productivity; and the normative of rhythmic output of products. The services and divisions had their own indicators. For the division of labor and wages, for example, the correct ratio between growth of labor productivity and wages.

On the basis of this they developed a form for intraplant plans. The main indicators on them were those which reflect both the economic and the social basis of the work of the collective. Our conclusion is that it is impossible to change over to operation under the new conditions formally, without special preparation.

I. A. Voronov, deputy general director for economics of the Sibelektrottyazhmash Association: We also conducted a large amount of preparatory work in three main areas. First, the organizational part, which includes the development of the unified opinions of the management regarding questions envisioned by the experiment, informing all of the direct workers of all of the documents, processing intraplant provisions and making additions to the cost-accounting relations within the plant.

The second area is prompt formation of the production plan for 1984 and the conclusion of agreements. We have managed to achieve a certain amount of success here. For the first time during the entire history of the plant, as of 1 January 1984 we had concluded agreements to cover 98 percent of the need.

The third area is work for more effective organization of production. Above all, the creation of the necessary level of incomplete production, which will make it possible to work stably under the conditions of the experiment and fulfill the contractual commitments. All of this work which was conducted in 1983, of course, produced positive results, and therefore during the first quarter of 1984 our plant successfully met all of the indicators established for it. The plan for 4 months for production volume was fulfilled by 107.9 percent and contractual commitments--by 100 percent.

A positive role was played by the instruction to the bank to pay for products delivered by the enterprises which were participating in the experiment, within the limits of the annual allocations allotted by the clients, regardless of the quarterly distribution of the plans for financing and extending credit. We have always made the formation of the plan dependent on the conditions that had arisen. From year to year there remained about 1.5 million rubles' worth of products that were not paid for (as of 1 January). And at the beginning of each year the plant was in a difficult financial position because of the fact that the clients, being on the card file, did not transfer the money to our account. The economic experiment removed this difficulty. In 1984 the sum of products that were not paid for amounted to 400,000 rubles as 1 May. As you can see, this is much less than before. We achieved good results in increasing labor productivity. It amounted to 107.7 percent. This is a fairly high indicator, taking into account the fact that as of 1 January 1984 our plant began to change over to the output of new products. The plan for reducing the production cost of the items was fulfilled.

V. D. Zulin, head economist of the Sibelektroterm Association: I think that the main retarding aspect in the changeover to the experiment is the fact that it was begun late. Therefore in 1983 the plans were not approved on time. And we produce unique items, 700 enterprises of the country deliver materials to us, and 770 deliver batching items....

Moreover, the experiment stipulates that the enterprises will conclude agreements with the clients before the beginning of the year. In 1983 we were not prepared for this. We managed to rectify the situation with respect to agreements somewhat in January 1984, but this, of course, was not enough. It was difficult to enter into the experiment in the 3 months that were allotted for this. Our situation was exacerbated by our difficult financial condition. In 1983 the plant received rejections for several million rubles' worth of products. We were not able to sell the batching items. They were hanging as deadweight over our enterprise. The bank extended credit to us in the first half of 1984, but it was difficult to say what would come next.

EKO: Vladimir Dement'yevich moved on to a very interesting subject: What were the "starting conditions" for the enterprises when changing over to operating under the conditions of the economic experiment? Just by knowing this it would be possible to evaluate objectively the work of the production collectives during this year. Representatives of the Gosnab and Gosbank are present at our meeting. They could obviously sketch the "starting conditions" for the enterprises.

I. G. Dubovskiy: I wish to name the most "painful" aspects for Novosibirsk enterprises that are participating in the experiment. They include, first and foremost, the chronic above-plan supplies of batching items and raw and processed materials. These circumstances are especially important for plants with unit and small-series nature of production and a lengthy cycle of manufacturing products, plants which produce costly sets of equipment which are saturated with a large quantity of batching items and parts that have to be ordered ahead of time. All three associations are among such enterprises.

Violation of the coordination between the products list plan for production and the plan for deliveries of concrete machines to concrete consumers withdraws from economic circulation a considerable quantity of material values, contributes to the formation of surpluses and nonliquid assets and, in the final analysis, worsens all results of economic activity. Thus in the Sibelektroterm Association as of 1 June 1984 there were above-norm production reserves of commodity and material values worth 6.7 million rubles. In 3.5 years of the 11th Five-Year Plan the above-normative residuals increased almost twofold, including during the first half of 1984 when they increased by 1.3 million rubles while for measures developed by the association they were to have been reduced by 2 million rubles.

The situation is complicated by the fact that a considerable part of the above-normative supplies, under existing conditions, are not subject to credit since they are materials and batching items which have remained in the warehouses for more than a year and have essentially become unnecessary.

The majority of above-normative supplies have appeared at the enterprises as a result of the disparity between the drafts of plans on the basis of which orders are drawn up for batching items and the improved plans, and also as a result of the frequent adjustment of planning assignments with respect to time periods and products lists. For this reason alone at enterprises of Sibelektroterm as of 1 July 1984 there were various kinds of values worth more than 848,000 rubles. The majority of them were specific batching items

that were intended for producing strictly specific kinds of furnaces which are no longer in the plan for the plant. In essence, these values have been turned into nonliquid assets since the ministry is not rendering assistance in distributing them.

V. A. Sycheva, chief of the division of credit for heavy industry of the Novosibirsk office of the USSR Gosbank: By the beginning of the economic experiment two out of three Novosibirsk associations that were participating in it were in a difficult financial condition and were partially ineligible for credit. Thus as of 1 December 1983 Sibelektroterm had reached 2.5 million rubles in nonpayments of Gosbank loans and its indebtedness to the suppliers amounted to 9.8 million rubles, and for Elektroagregat these figures were 1 and 13.4 million rubles, respectively. The main reason for the financial difficulties, as Iosif Grigor'yevich has already said, was above-normative residuals. Their structure was as follows for Sibelektroterm:

failure to fulfill the plan for the products list for 1983--3.7 million rubles;

bringing in values for machines which the consumers have rejected--0.2 million;

the existence of imported batching items purchased at the insistence of the client in the amount of 5.5 million rubles in 1982-1983. The purchaser refused the furnace for which these batching items were intended. Specialists of the enterprise think that it will be included in the production plan for 1987, but there are problems with this timetable;

the existence of values of 1.5 million which have not been moved for more than a year;

surplus bringing in of values for the 1983 program--0.3 million rubles;

the irregular output of prepared products--1.1 million rubles.

Because of the experiment the enterprise's credit was completely restored. This temporarily eased the difficult financial situation. Credit was granted in an amount of 9.2 million rubles and at the same time in the first quarter of 1984, with the permission of a government commission, credit was granted for 5.5 million rubles' worth of incoming imported batching items, 769,000 rubles' worth of unmarketable values and 3.5 million rubles' worth of values that were received in connection with the assimilation of new technical equipment.

As a result, as of 1 April 1984 credit investments had increased by 73.8 percent as compared to the corresponding date of last year, and the normative net output and sales had increased by 17.8 and 36.3 percent, respectively. Of course this situation bothers the bank. As of 1 April our credit had reached 16.1 million rubles while the normative for internal circulating capital is 17.1 million. In essence the enterprise has twice the amount of circulating capital that is needed for normal functioning.

The Elektroagregat Association entered the experiment with above-normative supplies in the amount of 21.4 million rubles which had been transferred to the products list which for several years had exceeded the commodity output. In 1983 this difference reached 12 million. All of the shortage of circulating capital was also covered by Gosbank credit. As of 1 April 1984 40.2 million rubles in credit had been granted while the normative for circulating capital was 28.9 million rubles.

Although the association reduced above-normative residuals by 1.3 million rubles during the first quarter, they still failed to carry out measures costing 1.134 million rubles. Moreover, the bank did not extend credit for supplies amounting to 6.6 million rubles since the prospects for bringing them back into economic circulation were unclear.

"The enterprises still have difficulties with the plan...."

EKO: And so the main reason for above-normative supplies of material values at the enterprises, as the comrades have said here, are shortcomings in planning. How is planning being improved under the conditions of the experiment? What rights have been granted to the enterprises? How are they being utilized?

V. V. Shalimov, general director of the Sibelektrotyazhmash Association: First and foremost there has been a sharp reduction in the number of planning indicators. In the five-year plan these include the growth rates of commercial output; the production of the main kinds of products in physical terms, including items of new technical equipment and exported products; the development, assimilation and introduction of new technical equipment, technological processes and scientific organization of labor; the proportion of products of the highest quality category in the overall volume of commercial output; the growth of labor productivity calculated according to the normative net output; and the reduction of the proportion of expenditures per 1 ruble of commercial output. The annual plans include the indicators of the fulfillment of contractual commitments; the production of products in physical terms; the development, assimilation and introduction of new technical equipment; the growth of labor productivity; the proportion of products of the highest quality category in the overall volume of commercial output; and profit.

Under the conditions of the experiment the enterprise forms the plan for the products list, coordinating it with the clients, it develops the production program, and it submits these documents to the ministry before 15 April. Before 1 May the ministry must return the approved balanced plan. In 1984 this did not happen since we did not begin in earnest to study the main areas of the experiment until November. Therefore the plan was drawn up according to the old procedures. That is, we have not yet taken advantage of this right. The new provisions will finally be checked by life itself with the formation of the 1985 plan. At the end of February 1984 we began to formulate it and, in conjunction with the consumers, we determined the products list.

I. A. Voronov: I wish to draw attention to long-range planning, which has already been discussed by Vladimir Vital'yevich, because the enterprises still

have difficulties with the plan. At our plant the production cycle for turbo generators lasts for 7 months, and hydrogenerators--up to 12 months. But the Gosplan, which is in charge of establishing the list of items that are produced, had not finally established it for turbo generators even by the middle of the year. At first plans were made for certain clients, and then for others. But, after all, they all have different conditions! It was necessary to completely process all of the documentation and prepare production from the beginning. In the meantime orders are being formulated for material and technical supply. The lack of good planning and production documentation makes it impossible to prepare production well for the output of particular products.

V. G. Zav'yalov, general director of the Sibelektroterm Association: Our association is experiencing similar difficulties. The 1984 plan was approved late, not until 12 October 1983. The ministry continued to change it for more than a half-year. Thus a number of additions were made to the plan during the first quarter of 1984. Previously unplanned items were added to it. So far the experiment has not solved these problems. To be sure, the results of the work during the first half-year were not bad. First of all, we fulfilled the delivery plan by 100 percent. Labor productivity increased by 7.7 percent as compared to last year, the production volume--by more than 10 percent, and profit by more than 30 percent. But these rates will hardly be maintained throughout the course of the year. They will fluctuate because of the fact that our products change from quarter to quarter and from month to month. Perhaps one could say that we entered the experiment under fairly difficult conditions, but it still helped us to solve certain general problems. First of all we felt that labor discipline improved sharply and, as a result, labor productivity increased.

I. S. Stepanov: We too received the 1984 plan late, although we received it a month and a half earlier than we did before we entered the experiment. It was balanced with the production capacities. This enabled us to be relieved of excess products. But balance of material and technical supply in the products list has not yet been achieved.

I. G. Dubovskiy: We have already discussed the unsatisfactory "starting conditions." Unfortunately the situation is not improving this year either.

There has been a considerable increase in above-normative supplies at all three enterprises. And, unfortunately, the prospects do not look good since the adjustments of the plan continue even after they are approved, which has already been discussed here. This applies both to production plans and plans for material and technical supply.

It is necessary to fight against these negative phenomena in the most decisive way. It is known that under the conditions of the economic experiment the output of products should be provided with the least possible expenditures on production and the least possible supplies of raw and processed materials while at the same time having maximum circulation of resources. Therefore above-normative values for which credit is not extended and for which increased payments are imposed worsen the economic indicators of the enterprises. The conclusion emerges that for enterprises that are

participating in the experiment an important aspect of their activity is essential improvement of financial and sales work. First and foremost, prompt and clearcut coordination of the products list plan for production and the portfolio of orders and agreements for the delivery of each item included in the plan as well as more efficient interaction with the ministry, sales agencies of the Gosplan and the consumer.

EKO: The Institute of Economics and Organization of Industrial Production of the Siberian Branch of the USSR Academy of Sciences has created a special interdivision group for analyzing the course of the economic experiment. What are the conclusions of this commission? Is the situation at the enterprises of Novosibirsk typical?

R. G. Karagedov: The experiment that is being conducted envisions increasing the role of production associations in drawing up plans for economic and social development in all stages of planning. But so far at the enterprises of Siberia that have been investigated no changes have been observed in this area. The following example is typical. The Sibelektrotiyazhmash plant, having received the control figures of the plan for 1984, introduced concrete points that were substantiated by calculations with respect to certain indicators. But the all-union production association refused even to consider them.

It is still too early to speak about the increased role of the five-year plan which is envisioned by the experiment. This will obviously take place under the next five-year plan. Under the current five-year plan the majority of industrial enterprises and production associations of Siberia which we investigated have neither a five-year nor even a 2-year plan. An even more typical situation is when there is not even a stable annual plan. So far the experiment has changed little in this area.

As for the reduction of the number of indicators approved for the enterprises which it envisions, this too will apparently take place under the next five-year plan. We have already discussed here the appreciable reduction in the number of directive indicators of the annual plan. So far it is still difficult to judge the degree of actual expansion of the rights of the enterprises because of this. The misgivings here are related to the fact that both the higher branch organizations and the territorial organizations as before require that the enterprises report on an entire group of indicators and they make practically no distinction between directive and calculated indicators.

Among the few measures of the experiment that have already exerted an appreciable influence on the operation of the enterprises one must include the foregrounding of the indicator of deliveries under agreements and commitments when evaluating the results of production and economic activity. The positive aspects of this have already been manifested: it has significantly influenced the decisions made by economic managers and unconditionally contributed to strengthening delivery discipline. The next task should probably be to develop measures that impede the tendency that has been observed in a number of cases toward a formal fulfillment of this indicator through, for example, conclusion of delivery agreements for "cautious" sums.

"And one more paradox...."

EKO: The next group of issues for discussion is the experiment and scientific and technical progress.

Are the production associations and enterprises being granted more independence in the utilization of the fund for the development of production? To what extent has this contributed to the expansion of their opportunities for reconstruction and technical re-equipment? What does the decree envision in this area?

V. V. Shalimov: So far we have not managed to take advantage of the rights granted in the area of capital construction and technical re-equipment, although here too measures which in our opinion are fairly effective have been envisioned. First of all we will be able to accumulate the fund for the development of production from year to year. This will make it possible to carry out planned development and preparation of the facilities that are most needed by the enterprise. Having prepared properly, it will be possible to begin their construction using this concentrated fund. In addition to centralized funds, noncentralized funds will also be allotted and they should also be provided with resources.

The fund for the development of production (FRP) is formed, according to the conditions of the experiment, from three sources: deductions from profit, amortization deductions of fixed capital and earnings from equipment that is sold. But the deductions from profit according to the normatives of this year are very small--7.7 percent. With respect to our plant, whose planned profit is 5.3 million rubles, they amount to only 400,000 rubles. This is less than the cost of one machine tool. The two other sources are practically permanent, and we cannot affect them. The sum from withdrawn equipment, moreover, is inadequate and cannot seriously be taken into account. It would seem that the enterprise should be motivated in obtaining more profit in order to have larger deductions into the FRP. But the normative is too narrow and therefore the interest is only apparent. I think that in order to have real interest it is necessary to increase this normative.

I. A. Voronov: In 1983 under a centralized policy we increased the fund for development of production (and it amounted to 3,295,000 rubles) so that we could replace part of the outdated equipment. But under the conditions of the experiment in 1984 this fund was almost cut in half.... We need 2 million rubles for equipment, and the fund for the development of production for this year amounted to 1.85 billion rubles.

I. S. Stepanov: I wish to draw attention to the following point. Under the conditions of the experiment the introduction of the achievements of scientific and technical progress into production acquires considerably more significance than it previously had. This is true even though our branch has always financed work for scientific and technical progress in a planned way, outstripping other branches of machine building in this area. Now many kinds of work for technical re-equipment, as we know, are placed on the shoulders of the enterprises. But the material resources for the construction and

installation work and the limit for the number of personnel and the wage fund are planned, as before, by the higher organizations. Our association was allotted nothing for 1984. We think that this is an imperfection and that it should be taken into account by the interdepartmental commission which handles the analysis of the course of the experiment. In particular, this work can be entrusted to local agencies of the Gosstab and the corresponding agencies of the Gosbank.

V. G. Zav'yakov: And another paradox which clearly does not contribute to the introduction of the achievements of scientific and technical progress is the lack of incentives for designers of the SKB [Special Design Bureau]. The system of incentives embraces all categories of plant workers except for workers of the SKB. Of course this reduces their interest in the final result.

R. G. Karagedov: In spite of the decree concerning the experiment, we have not carried out the decisions concerning material and technical support for work for raising the technical level of production using the enterprise's own funds. Expansion of the possibilities of bank credit and also the utilization of some of the currency funds are still only theoretical issues. One must say that the implementation of the measures envisioned in this area fall mainly within the realm of competence, not of the enterprises themselves, but of the ministries and all-union production associations.

"One can note a certain improvement in material and technical supply...."

V. G. Zav'yakov: The results of the work in the first quarter have shown that the provision of material resources has improved. A large amount of work has been conducted in rail transportation. This is very important since one item which we produce costs from 300,000 to 3 million rubles, and the loading norm for the cars for it is up to 60 units.

I. A. Voronov: Indeed, the instructions which were given to the management of the UMTS regarding priority provision of the enterprises participating in the experiment and the intervention of the oblast party committee played a positive role. But in our plant as a whole the material resources for 1984 were not balanced with the production program. A number of problems remained unsolved until the end of the year, especially with respect to materials which are distributed by the ministry and our all-union association.

V. G. Zav'yakov: An interesting situation can arise at the end of the year when it will be necessary to "cast off" certain agreements because of a shortage, for example, of transportation. Thus at our head plant we have a long cycle of tests for the final product, its disassembly and packaging. And it has happened that at the end of the fourth quarter more than 5-7 million rubles' worth of products have accumulated. This problem also needs to be studied.

Question: And how are the material and technical supply agencies working with the enterprises that have been transferred over to the experiment?

I. G. Dubovskiy: For a rapid solution to problems of material supply for participants in the experiment, the Gossnab has created a special operations group under the leadership of the deputy chairman of the USSR Gossnab. The same kinds of operations groups have been created in the Gossnabs of the union republics and in the territorial administrations of the Russian Federation. This makes it possible to solve better and more rapidly the problems that arise with respect to supply, sales and the provision of transportation.

Gossnab agencies have established special supervision of the balance of the production program in the established list of products with the material and technical support; precise correspondence between the production plan and the delivery plan; prompt receipt of the order schedules and conclusion of agreements for the delivery of products; and control over the regular shipment of the final products. It is known that at any enterprise some produce products, that is, "make the plan," and others sell them, and "cover" orders. Until recently their interests have not always coincided. There have been frequent cases in which the plan for production is fulfilled and the products are ready, but there is nowhere to send them. Establishing deliveries in keeping with agreements as the main evaluation indicator for the fulfillment of the plan brings the interests of the production workers and the sales workers closer together. Under the conditions of the experiment this problem becomes especially crucial. A number of enterprises are creating unified production-sales divisions which send to the shops not assignments for the output of products, as was previously the case, but schedules for dispatching products to specific consumers. This practice has completely justified itself and its results deserve attention from all participants in the experiment.

Question: And what happens to above-normative supplies? Can you not help the enterprises to obtain their own? Perhaps they are needed somewhere in the country?

I. G. Dubovskiy: Of the above-normative supplies in the three Novosibirsk associations 90 percent are specific batching items which are ordered for specific kinds of machines and sets of equipment. These items are distributed within the ministry and the enterprises do not have the right to redistribute them. But still they have above-normative supplies of ferrous and nonferrous metals and other kinds of resources which can and should be redistributed....

R. G. Karagedov: Under the new conditions for work one can observe a certain increase in the role of economic agreements because of the more rigid control over the fulfillment of the plan for deliveries and a certain improvement in material and technical supply of the enterprises, although not of all of them. According to our estimate (taking into account the work experience of other enterprises in addition to those in Novosibirsk), so far there are no significant changes in the direction of improving the organization of material and technical supply itself. They might appear later if the economic norms and economic agreements actually become decisive factors in the formation of plans and we put a stop to the practice of frequent unsubstantiated revisions of the plans.

"The experiment envisions much that is positive in the area of labor and wages."

I. A. Voronov: By taking advantage of the right that was granted to the plant administration--using part of the savings on the wage fund to establish various additional payments for highly skilled workers and engineering and technical personnel--we used about 85,000 of the 266,000 rubles that were saved for establishing additional payments. Our main direction was additional payments for highly skilled engineering and technical personnel who directly influence the final result. Since the plant fulfilled the main indicator--reducing expenditures per ruble of commercial output--and achieved 100-percent fulfillment of contractual commitments, we were able to considerably increase the material incentive fund.

What problems must be solved, in our opinion? First of all, it is necessary to revise the limits for maintaining administrative and management personnel and production-economic services, on which we are placing a large burden of work for conducting the economic experiment. Who does the multivariant calculations? The economic and material-technical divisions, the bookkeeping office, and the division for labor and wages. Who makes sure that orders for materials are submitted promptly? The personnel of the material and technical division. And yet the "sword" is always hanging over them--the threat of reducing their numbers. And we consider this to be fundamentally incorrect. It is necessary to give the plant management itself the right to determine where and which workers are needed today.

V. D. Zulin: Of course, the experiment envisions a good deal that is positive in the area of labor and wages. Above all, in the formation of the wage fund. While previously each enterprise did a good deal in its own way, now everything is precise and clearly determined. To be sure, we have somewhat changed the coefficient for deducting the FZP, depending on the profit in the NChP. For the head plant we have taken 0.34, and for the branches it was set higher.

The conditions of the experiment stipulate that if the enterprise has fulfilled the plan for deliveries by 100 percent it has the right to increase the material incentive fund by 15 percent, regardless of whether it has wage rates or profit. But it has turned out that the Ministry of Finance has written its own clarification: "...Under the condition that there is above-plan profit." And actually for us the entire provision has been nullified. For it is very difficult to obtain above-plan profit, almost impossible. Apparently this problem must be solved.

Question: What are the growth rates of labor productivity at your enterprise?

V. D. Zulin: In 1983 they amounted to 124 percent, and for the 4 months of 1984--117.1 percent.

Question: And how do you establish the additional payments?

V. D. Zulin: The plant has organized a commission for establishing additional payments which is headed by the head engineer and it has issued a special order. The commission has considered each category of workers at the enterprise and determined for whom additional payments should be made and in

what amount. But if a comrade has stopped working as well as he previously did, the commission has the right to withdraw this additional payment.

I. S. Stepanov: We have a similar commission working at our plant. First of all we singled out the key sections of production. We developed a provision concerning the establishment of salaries for skilled workers employed in these sections up to 250 rubles. Ivan Andreyevich has already discussed the clarification of the USSR Ministry of Finance for the provisions concerning the experiment. We too made fools of ourselves regarding this issue. When conducting organizational and explanatory work among the collective of the plant we told the workers that if the collective were to work well there would be an additional material incentive fund. But the clarification of the Ministry of Finance canceled all this. According to the results of the first quarter we were to have deposited 57,000 rubles, but we did actually deposit only 1,000. It does no good to tell the collective that there are different variants of the instructions: it would be desirable to create a variant which would motivate the enterprise to try for 100-percent fulfillment of commitments under agreements.

"Questions of responsibility should not recede into the background...."

V. A. Sycheva: For the first time in many years all three enterprises participating in the experiment fulfilled the sales plan, taking into account deliveries for the first quarter of 1984, by 100 percent. But here is what bothers the bank: not a single one of them has fulfilled the plan with respect to the products list. From this one can draw the conclusion that the fulfillment of deliveries under agreements was achieved as a result of the deterioration of indicators of work in the fourth quarter of 1983 when the enterprises were not striving to make up for the arrears, but began to work on the 1984 program, and also as a result of postponing agreements and refusing to deliver products. The plans for the products list, as a rule, indicate not only the quarter, but also the month of output, but in the orders for deliveries the concept of the delivery period is more vague--the first or second half of the year, or even the year. This makes it possible to take credit for the fulfillment of deliveries while failing to fulfill the products list. It is no accident that the enterprises unanimously consider it necessary to abolish the products list as a planning indicator, limiting the evaluation of their work only to the fulfillment of the agreements.

All of the enterprises unanimously approve of the rights that have been granted to them for utilizing the wage fund and the material incentive funds. But here, in our opinion, there are still many problems. The state of affairs that has arisen this year does not gratify us. The Elektroagregat Association has maintained an above-plan number of personnel. Under the old conditions for this kind of disobedience the bank would have reduced the wages due them by 100,400 rubles, and the association would have had an overexpenditure of the wage fund instead of a savings.

Thus so far it is typical of the economies of these enterprises to have a clearly expressed extensive path of development. They have fully taken advantage of the rights that have been granted to them. Yet the questions of responsibility should not recede into the background.

Response: But still you granted them credit in keeping with the conditions of the experiment! Why are reproaching them now?

S. B. Sverdlik, candidate of economic sciences, department chief of the Novosibirsk Institute of the National Economy: Before granting rights to the manager of an enterprise it is necessary to teach him how to take advantage of them and to instill in him a desire to analyze the activity of his enterprise.

A great deal is being said today about expanding the rights of the enterprise and its managers, but one should not forget about their responsibility either, particularly for the overexpenditure of the wage fund. I think that this question should be included in the investigation which will be conducted by the Institute of Economics and Organization of Industrial Production of the Siberian Branch of the USSR Academy of Sciences.

"The experiment does not envision this...."

EKO: I should like to hear the opinion of those who still have to change over to the new conditions of operation, who are essentially discussing the problems today.

G. Ye. Kolonda: A good deal has been said here about above-normative supplies at the three enterprises that are participating in the experiment. With the current condition of material and technical supply I believe that they exist at all enterprises since the allotment of funds and the plan are not always coordinated. In rapidly changing production, of course, there are certain reserves. I think that enlisting above-normative reserves into the national economy is the concern not only of the enterprises, but also of the material and technical supply agencies. That is, the work should be carried out in three directions: through the services of the plants, the external supply organizations and taking advantage of free sales. Of course frequently this work is impeded by departmental barriers. But the material and technical supply agencies should coordinate this work.

Response: But who established the normative for reserves and when? In light industry, for example, the normatives have not been revised since 1962. During this time everything has changed except the normatives. It would be a good idea to check them.

Zh. F. Kryuchkov: The material and technical supply agencies are doing a great deal under the experiment, but they are not responsible for any of it. Today an experiment is in progress and party organizations are engaging in it very energetically, but, after all, this is only temporary. When we all change over to the conditions of the experiment, there will no longer be a red line under announcements concerning capital. I think that the material and technical supply agencies should participate actively in the experiment and bear full responsibility for the prompt delivery of materials.

Another aspect is the incentives for the manufacture of products that can compete on the market. All of us understand that an enterprise which has resolved to do this immediately falls into disadvantageous conditions. At

this point it cannot do without a great deal of assistance. It is necessary to have some kind of stimuli which would motivate the enterprise to take this step and which would not compensate for its expenditures but would motivate it. It turns out that the experiment does not envision this.

Yu. G. Shelyukhin: I think that today, when speaking about the work under new conditions, it is necessary to raise once again the question of price setting. Until the price takes into account the reduction of the labor-intensiveness of the new item and the effect from its introduction on a statewide scale the experiment will not be fulfilling its function.

V. V. Shalimov: The conditions of the experiment envision a certain amount of freedom for enterprises in price setting. Now we can establish prices for experimental models and experimental batches of new products with the agreement of the clients; increments for products that are to be exported; and increments for items that have the Emblem of Quality (for the time it is in effect). With satisfaction of the additional requirements of the client (in terms of batching items, for example) and agreement with him, the enterprise can establish additional payments to the whole sale prices. Of course the work for creating and assimilating the new item improves. But one should not rely only on the prices of the new products.

"The experiment should be clearly calculated and coordinated with the needs of the national economy."

EKO: Apparently the time has come to sum up what has been said.

What general conclusions can be drawn from the first months of work under the new conditions? What problems have arisen? What suggestions have appeared? If the experiment were to be prepared all over again, what changes would you make in its conditions?

I. A. Voronov: We think that the economic experiment should have been conducted initially not at enterprises of branches of machine building, but at enterprises of raw material and extraction branches and in transportation. If they had been changed over to the conditions of 100-percent fulfillment of contractual commitments, there would have been a disappearance of the factors causing many negative phenomena which now exist in ferrous and nonferrous metallurgy and transportation and which lead to difficulties in the development of other branches.

I. S. Stepanov: We are bothered by the fact that the style and methods of operation of the economic apparatus with respect to our enterprises have not changed. Here is an example: the products list is now planned for us by the higher organizations. And they have planned so much that it considerably exceeds the production capacities. And this is the level not of the rank-and-file workers, but of the chiefs of divisions of the ministry. Hence the continual friction in relations with the bank. And only after intervention from the deputy minister, M. P. Galev, was the production plan balanced with the capacities.

Here are a lot, an infinite number of refinements and adjustments to the conditions of the experiment. This impedes the work.

I should also like to discuss the training for next year. It is written in the measures concerning the conditions of the experiment that in 1984-1985 we should conduct not merely familiarization studies concerning the experiment, but serious economic training. So far it has been limited to random materials in the newspapers and magazines, and there has been no generalized material. We would like for the scientific and economics community to publish the corresponding materials in the central journals. If one is to speak about the work of our Institute of Economics and Organization of Industrial Production of the Siberian Branch of the USSR Academy of Sciences, we should like for the materials on the analysis of the work of all three enterprises to be constantly generalized and disseminated to the enterprises. This will help us in our work.

V. D. Zulin: By the beginning of the experiment the ministry had prepared a good collection of methodological documents. But then there followed so many changes that we are beginning to be confused with them. I think that if documents are to be published they should be fully thought out so that it will not be necessary to make a multitude of additions and changes. In a mass of documents it is difficult to glimpse that stumbling stone on which one might be caught.

There is still a good deal that the experiment has not resolved. We have already discussed price setting here. In the very first stage of the experiment we went to our ministry with questions about price setting. Now we are developing prices, coordinating them with the client, and returning to the head institute, and then at the enterprise to the client, and then to the deputy minister. It is a long and complicated chain which takes up a good deal of time and effort. But the main thing is that production suffers because it frequently happens that the item is manufactured and there is no price for it. We cannot sell products without a coordinated price. And in the final analysis the prices are remaining at the same level at which they were initially coordinated with the client. We have requested that this procedure be simplified. So far we have received no response.

The next problem that is important to us: the products are considered ready when they are packed. It takes us 45 days to collect them after testing and pack them. But when the calculation of circulating capital is carried out this period is not included anywhere. But, after all, these 45 days exist!

The essence of the experiment amounts to fulfilling three indicators. First is the delivery plan, the second--increased labor productivity, and the third--reduced production costs. It would seem that everything is clear. But the statistical accounting has remained as it was before and therefore we are working both under the conditions of the experiment and according to the old system. It turns out that the higher branch organizations, the territorial organizations and the central statistical administrations cannot be restructured under the experiment. This takes a lot of time and overloads the administrative staff. And if one adds to this the multitude of various commissions I assure you that it is very difficult to work in the experiment.

On the whole the experiment needs to be perfected. And, of course, all this must be done in such a way that the minimal rights which have been given to the enterprises will not be violated.

V. G. Zav'yalov: I consider the most important thing to be the fact that the experiment has clearly defined the limits of our responsibility--these are the fulfillment of contractual commitments, that is, the output of those products which are especially necessary to the national economy at the given moment. I consider this to be the most important element of the experiment.

Perhaps the most crucial problem which must be resolved by our enterprise is above-normative residuals. This problem cannot be resolved even in 20 years. Now the majority of above-normative supplies are related to the nature of our production, and also to the unstable products list. First we were ordered to build a complicated furnace, and then the time period for doing that was postponed or (and such cases exist) the order was canceled altogether. Then in 1981 we acquired 5.5 million rubles' worth of imported equipment for manufacturing installations which had no analogs in the world. But the client rejected them. And, after all, since the installation was to be used in a tropical climate, it is impossible to sell the equipment. And it turns out that sometimes our association can get credit and sometimes it cannot....

Moreover, we are beginning to put installations into production depending on the arrival of metal. According to the draft of the plan for 1985, we should begin to manufacture an installation which is intended for the first quarter in September of 1984. But the metal has not yet been allotted for it although the batching items are arriving regularly in the various quarters. During three-quarters of 1984 batching items for this installation worth more than a million rubles were lying around in the plant. And we did not begin production of it until the third quarter since there was no metal. There are your above-normative supplies of batching items! The enterprise does not get into the situation because our economists cannot count. We production workers are bound by the old instructions.

It is interesting that there are two decrees concerning the experiment: one, for the Ministry of Heavy Machine Building, and the other--for the Ministry of the Electrical Equipment Ministry. If our enterprise were under the jurisdiction of the Ministry of Heavy Machine Building we would find ourselves in more advantageous conditions. The fact is that their enterprises are permitted to deliver heavy equipment and to sell and to take credit for it as it is assembled. But this is not true in the Ministry of the Electrical Equipment Industry and, in our opinion, it should be.

My conclusion is this: the experiment is extremely necessary but it should be clearly calculated and coordinated with the needs of the national economy.

And the last thing is that the experiment, even the work which has been done as of today, has made it possible not formally, but in actuality to raise the activity of the working class--labor productivity has increased as have its effectiveness, labor discipline and product quality. But additional labor efforts presuppose additional material goods. This is natural. During the first quarter we gave the collective a bonus, and for the first time in 4

years we paid a quarterly bonus to the middle level--the foremen and engineering and technical personnel. The collective understood that good work under the new conditions would be well paid for. It became easier to work with the people. But then another problem arose here. We will hardly be able to give the people a bonus in other quarters since the ministry has established for us a plan based on what was achieved in 1983, forgetting about the fact that in 1982 we did not fulfill the plan because of the lack of electric power and in 1983 we made up for what had been lost.

V. V. Shalimov: Indeed, the results of the experiment must be carefully analyzed. During this analysis we should rely more extensively on the experience of all past economic experiments, including the economic reform of 1965.

One hopes that this is only the first step. The experiment must be expanded and cannot be regarded as the final result. One should probably also think about a system of overall responsibility--of planning agencies, ministries, the USSR Gosplan, the state committees and the enterprises. That is, there should be a well-thought-out system of responsibility both along the horizontal and along the vertical.

Yu. G. Shelyukhin: I think that many of the questions which we are discussing today would not require discussion if we had put into action all of the measures envisioned in the decrees of the party and the government. The decrees which permit us to display independence and also the indicators with which our activity is to be evaluated are quite sufficient today. The problem is that the manager cannot always take advantage of them since after the "clarifications" by the Gosplan, the Ministry of Finance, the State Committee for Labor and Social Problems and other levels the initial good intentions are changed beyond recognition. This is precisely because many of the measures that have already been adopted are not carried out in enterprises whose work results cannot be compared end up in equal situations.

Is there any point in suggesting and developing new solutions? I think that it would be worthwhile to solve the problem of more complete introduction of the decrees that have already been published. Of course, it is first necessary to increase the responsibility and the motivation of the individuals on whom this depends. Is the chief of the main board or VPO now materially interested in making sure that the enterprises that are included in the main boards work successfully on increasing the effectiveness of production? And the chief of the main technical administration or the chief of the main administration of the ministry? And the associate? What kind of responsibility do they bear for high-quality performance of their official duties?...

Delegating rights--and this is precisely what should take place--is possible only with personal interest on the part of the person who is supposed to do this. It has also been necessary to be concerned about this.

I think that if these problems are not solved the enterprises, even those that have been given more extensive rights in the area of economic activity, will be placed in difficult conditions.

R. G. Karagedov: The conclusions of the scientific council of the Institute of Economics and Organization of Industrial Production of the Siberian Branch of the USSR National Economy regarding the first results of the work under the conditions of the economic experiment consist in the following.

Under the conditions of the experiment more attention was devoted to the economic indicators of production at the enterprises themselves and in the higher branch organizations and Soviet, economic and party agencies. A considerable amount of work has been done at the enterprises for improving the organization and payment for labor and planning and stimulation of production.

The measures of the experiment as a whole are undoubtedly contributing to increasing the economic incentives of the labor collectives to improve the results of production. Their effect may be manifested more fully during the 2 years that remain until the end of the five-year plan, but even now this is being impeded by the inadequately consistent implementation of measures in the experiment. A large part of the responsibility for this lies with the branch ministries and their subdivisions (VPO's), which have not prepared the necessary methodological and other support for the experiment and, in a number of cases, have not restructured their work in keeping with its requirements. Thus there can appear at the enterprises a situation of mistrust of the possibility of actually expanding rights in planning and economic activity. This reduces the activity of the labor collectives.

The first familiarization with the course of the economic experiment also suggests the conclusion that the measures it envisions (even if one provides for their efficient and consistent implementation) are inadequate for the creation of a qualitative about-face in the activity of the enterprises. In order to carry out the task formulated by the party agencies--to enter the 12th Five-Year Plan with a smoothly running economic mechanism--it will be necessary, in our opinion, to take additional measures for expanding the rights of production enterprises in planning and economic activity. These should be measures in the same direction as those that are being carried out at the present time, but they should be more radical.

#### Suggestions

As Comrade K. U. Chernenko said, the search for the new should not be confined to enterprises that are participating in one experiment or another. What further steps should be taken in the direction of expanding the economic rights of the enterprises and managers and also increasing their responsibility?

Yu. I. Tychkov: It seems to me that there is some point in "unbalancing" the level of material incentives for managers. If the enterprise has taken on sufficiently serious commitments, over a certain period the managers of this enterprise (the person in charge, the technical director and a small group of head specialists) will receive considerably greater remunerations--not 5-10 percent, but, for example, 40-50 percent. And, conversely, the average person will receive average remuneration. A person who has not fulfilled the assignment for the first quarter will have all of his bonuses reduced, and if

he continues to fail to fulfill the plan there will be a 25 percent reduction of his basic salary. This is when we shall understand who is who. Certain comrades feel that they are not in a position to manage a large business and are finding places that correspond more to their capabilities. It seems to me that one can begin with light industry. Here are extensive possibilities of enlisting the market mechanism and the organization of the corresponding firms.

Now about what the responsibility of the enterprise should be? First and foremost, material. Should there be strict material sanctions for failure to fulfill plans, contracts and so forth. If an enterprise has accepted and fulfilled an order, all of the conditions equal, should it be given preference when submitting requests to the Gosplan and vice versa. This in conjunction with implementing the suggestion concerning unbalancing the level of material remuneration for managers will serve as a good stimulus for developing efficiency and economic independence.

It seems expedient to sharply reduce the number of ministries. One of the directors told me that a number of enterprises are not ready to take advantage of modern electronic microcircuits which his enterprise is already producing. But try to ask him for something you need for newly created equipment without promising him a great economic advantage and he will not give it to you. Interdepartmental barriers are still growing. It seems to me that it is necessary to proceed toward a considerable consolidation of the ministries and to sharply reduce the number of indicators that are planned from above, especially in branches of light industry. And in other branches too we should gradually narrow the group of indicators and also consolidate the ministries.

B. V. Prilepskiy: Now in practice the personnel are being moved from the main boards to the VPO's and from the VPO's to the main boards, that is, the improvement is in words and not in deeds....

I. P. Selivanov: Indeed, those VPO's which have been formed to replace main boards should be eliminated in the near future because they are simply useless agencies, a superfluous superstructure over the management apparatus of which we have too many in our country. They show absolutely no promise.

Yu. I. Tychkov: I would formulate the strategy for the development of management as follows: In my opinion, the USSR Gosplan should develop an overall strategy of "what to do." And the enterprises should determine "how to do it." The determination of priorities on a state scale and large investment decisions are the functions of the Gosplan. Everything else should be turned over to the enterprise. In general it seems to me that the Gosplan should retain the functions of determining (in conjunction with the State Committee for Science and Technology) the overall strategy for the development of the national economy and determining the investment policy. In these areas its rights, authority and range of action should be essentially increased.

I have one more idea. Let us assume that the Gosplan has established that some product (kind of product) is not being produced in a sufficient quantity or is not being produced at all, but the national economy needs it. The Gosplan prepares for and conducts a competition of orders. Having become

familiar before hand with the necessary materials, we executives go and look and decide whether we can take the order. If we can organize the output of the product in a certain amount of time we conclude an agreement in which we stipulate the volume of necessary capital investments, other conditions (for example, export deliveries), and also the time periods within which we are obligated to arrange for the output of the new product. Then the firm that has taken the general contract receives all of the investment limits. It looks for its own contracting agents, that is, the idea in most general form consists in that as soon as the "needs" and their priorities are determined, for each of these "needs" there is a competition of orders. The head firm is given the right to find contracting agencies and the full volume of capital investments. This idea does not seem fantastic to me.

And another urgent problem, which has probably gone unsolved too long. It is necessary to reduce the rigidity, the "lack of choice" in planning financial resources which are allotted to the enterprise. The wage fund and the material incentive fund are absolutely not interchangeable. In recent years even budget allocations and funds allotted for acquiring equipment are rigidly separated in the plan into two areas--for newly constructed facilities and for technical re-equipment. Frequently even the equipment which is not included in the estimates for construction and reconstruction cannot be acquired from the allocations that are allotted if it has not been included on the list that has been drawn up and approved by the higher organization in the preceding planning year. These examples of "multicolored money" could be continued, but the essence is the same: with such an abundance of limitations with respect to the most important questions of management, one cannot speak about real independence. With all of its complexity this question requires the most immediate resolution.

G. I. Loginov: I shall not criticize the ministry and quote my colleagues, but shall discuss those issues which I should like to see resolved. I think that in any case the mandatory sphere of activity and services should be determined for enterprise, as should the needs of the country which it is obligated to satisfy. The enterprise can produce other products, but only under the condition that it fulfill the plan for the kind of products assigned to it.

In my opinion, the indicators of the activity of the enterprise should be planned for the five-year plan. Thus for the five-year plan one should establish the maximum limits on the consumption of the main kinds of resources. The consumption of resources is determined according to normatives which are developed on the basis of the scientific and technical level that has been reached in the given area of technical equipment and on the basis of the best domestic and foreign analogs, that is, the enterprise will be constantly searching for possibilities of increasing the effectiveness of production and taking advantage of the achievements of scientific and technical progress. The norms should be revised once every 5 years.

It would probably be reasonable to establish the following indicators and maximum limitations: the volume of sales of products, services and so forth (no less); the number of workers (no more); the consumption of material resources (no more); the consumption of fuel and energy resources (no more);

the wage fund (no more); circulating capital (no more); profit and payments into the budget (no less); and the overall volume of capital investments (no more).

The rest of the indicators can be established by the enterprise itself.

While expanding the economic independence of the enterprise one should at the same time increase its responsibility for the results of production and economic activity and the fulfillment of contractual commitments. The fines imposed on the supplier enterprise for the failure to deliver products within the established time periods should, in my opinion, compensate for the value of the products that were not produced by the consumer enterprise minus the normative wages and overhead expenditures that go into the cost of the products that were not produced. Here it would be useful to pay the fine out of the funds for material incentives, social and cultural measures and housing construction, and when there is no money in these funds, perhaps, the fines should come out of the wage fund. The enterprise should have the opportunity to apply equally rigid sanctions against supply-sales and transportation organizations.

It is especially necessary to increase the responsibility of enterprises and trade for the output and sales of consumer goods. It should be mandatory to establish maximum time periods for their sales based on the kinds of goods, the time necessary for transportation and other factors. If the products have not been sold within the established time periods, they should be returned to the manufacturing enterprise with the corresponding adjustment of the planning indicators. Then the enterprise has the right to impose fines on the trade organizations since they have accepted the goods for sale. Other variants of influencing the enterprise are also possible, but in any case the goods should not lie around without moving for a long period of time.

V. I. Cheplakov: One cannot agree with the practice of expanded reproduction which exists today. Judge for yourselves. Capital investments in the development of production and for social and cultural measures are allotted centrally and, consequently, they are not connected to the commercial production of the enterprise. In our opinion, the development of industrial production and housing construction at the enterprise and also the creation of economic incentive funds should be based on and should develop according to the commercial production of this enterprise. And the enterprise's profit should be a source for covering all expenditures. If the managers of the enterprise and all participants in production were to see and know that the development of production issues depends on the rates of development of production and the sources of their own profit, then many issues, both production and social, would be resolved here, at the enterprise. Only then would the slogan "Work": "If you want to live better--produce more of the products which are necessary to the population!"

One cannot agree with the existing form of extending credit to industrial enterprises either. Short-term credit from special loan accounts does not make the enterprises think very much about repaying the credit, and here payment for commodity and material values are made by the bank with the tacit agreement of the purchasers. The reverse side of this operation does more--to

help the supplier fill the sales plan. But how will the commodity and material values that are acquired be used--far from all managers think about this. In this connection it is necessary to develop and adopt additional measures at those enterprises where there is an unjustifiably increase in above-normative residuals of commodity and material values for which credit has not been extended.

Appreciable sanctions should be placed on the enterprise for the failure to fulfill other centrally planned indicators as well.

We consider it most expedient to arrange all credit relations on a contractual basis whereby the presently existing complicated and cumbersome technical rules for extending credit would not be necessary. In the agreements concluded between the enterprise and the bank for the calendar year it would be possible to determine by calculation the overall sum with a breakdown for the various quarters, and the amounts of required loan funds and credit which are subject to be returned. In the agreements, of course, one should reflect the justification for the credit that is being requested and the measures that are directed toward actually providing sources for repayment of loans which are subject to being repaid, and also the rights and responsibilities of the parties to the agreement which envision both fines and incentives. Under these conditions, in our opinion, credit will contribute more actively to increasingly the effectiveness of public production.

Are Enterprise Managers Prepared To Work Under the New Conditions?

EKO: The major creative force which provides for increasing the effectiveness of production with the given level of technology is man. I wish to raise this question: Are our executives prepared to work under the conditions of extensive independence?

R. G. Karagedov: This is a difficult question. The fact is that the existing economic mechanism has engendered a certain type of manager. Previously it seemed to me that it would be sufficient to grant certain rights to our managers and they would be able to move mountains. But in recent years I have become convinced that not all of them want these rights, and the following situation is better for some of them: fewer rights and, consequently, less responsibility.

Moreover, in order to take advantage of the extensive rights, it is necessary to have the corresponding preparation.

Question: What, in your opinion, is retarding the effectiveness of training managers of industrial enterprises in our country?

R. G. Karagedov: You see, the future manager must learn that which he will be doing every day in his work. We already offer many courses which raise the overall level of the manager, but we do not have enough specialized management disciplines.

Question: And why is this, in your opinion?

R. G. Karagedov: There are many reasons. In my opinion, we do not yet have a well-thought-out and clearly formulated strategy in the area of training and retraining management personnel, and the new requirements in this area are not sufficiently taken into account.

Unfortunately, we do not devote enough attention to the study of the current state of affairs or its analysis. We need research which would show how the economic mechanism is actually functioning and how the director makes his decisions. But this is very complicated. The economic mechanism that is currently in effect and the numerous barriers which the managers have to surmount by methods, on the border of what is allowed, does not dispose them toward frankness....

G. Ye. Kolonda: If we were to implement the complex of measures for expanding the economic independence of cost-accounting enterprises and of their managers, we must first of all conduct a large amount of preparatory work among the managers. Perhaps some of them could be replaced and some of them could be given additional training.

And another thing: recently I have observed that some of the youth who have enough knowledge to be managers at the highest level are not especially interested in this responsible job. One encounters passivity and a dependent attitude. It is necessary to think seriously about how to eradicate these.

B. V. Prilepskiy: I should not like to evaluate the state of affairs pessimistically. The contacts I have formed both in my own branch and in others show that the level of the directors on the whole is sufficient for them to solve many problems independently and in a way that is acceptable to the state. I was working during the 1960's when there were directors who had come to industry after the war. They were responsible and active, although they were frequently not technically trained. But as a result of their colossal enthusiasm and taking advantage of the reserves of engineering and technical personnel they moved production forward. Then the management was taken over by directors who were technically literate and who had a large amount of enthusiasm. But now these managers are being replaced by people who are well-trained on the technical and economic plane and who should retain the high emotional enthusiasm and responsibility in their work.

Now about training. I had the good fortune to study in the fourth group of the special department in the Institute of Economics and Organization of Industrial Production of the Siberian Branch of the USSR Academy of Sciences. In and of itself the 3 months' training was useful from two standpoints. I entered into direct contact with economists and also with my colleagues--this is another school. This cannot leave a thinking person unaffected. I think that the experience of our special department should be disseminated because improvement of the economic mechanism is impossible without trained personnel. Even a good decree or suggestion can be defeated locally because of the poorly qualified personnel.

A. G. Aganbegyan: In our meetings we have discussed a fairly large group of issues that pertain to combining centralization and decentralization and the provisions for the socialist cost-accounting enterprise. Many interesting

ideas have been expressed concerning the conducting of the large-scale economic experiment for expanding the rights of the industrial enterprise and increasing its responsibility for the results of its work. I shall try to sum up only a few of the results. In a socialist state everything is determined by the quality of the plan. Regardless of what the system of incentives may be, if the plan is not realistic, is of poor quality or if the enterprises have not been informed of it promptly, one cannot expect good results from their work. One must say that in the Ministry of the Electrical Equipment Industry the 1984 plan was better than ever before, but it was still inadequate from the standpoint of the growing requirements that are being placed on it. Because of better planning it was possible, in particular, to achieve a greater degree of fulfillment of contractual agreements.

Of course one must keep in mind that the experiment was started under conditions whereby it coincided with the beginning of the 5-year cycle, and this made the work of drawing up the plan more difficult.

The changeover of other branches of the national economy to work under the new conditions will be timed to coincide with the beginning of the next five-year plan. Therefore the changeover to the new system will coincide with the drawing up of the five-year plan. The USSR Gosplan is now conducting a large amount of work in this area, and the work is proceeding more intensively than ever before.

On the whole the experiment has significantly improved the results of management in the branches in which it is being carried out. There has also been an increase in the effectiveness of public production. But no radical changes have been observed here. There has been a radical change in the fulfillment of contractual commitments. The jump from 93-94 percent to 99-100 percent is indeed an important result since it affects numerous consumers. And if after the changeover to the conditions of the experiment there will be equally rigid responsibility and high incentives for fulfillment of plans for deliveries under agreements, then even without the utilization of orders with red underlining things will go well, especially if the conditions of the experiment are augmented with sanctions for complete reimbursement of damages resulting from violations of agreements as is the case with international agreements and is being applied successfully in a number of socialist countries.

My personal opinion is that the conditions for forming the wage fund according to increased NChP normatives does not sufficiently stimulate increased labor productivity, reduced material-intensiveness or increased output-capital ratio. A stronger influence on the indicators of effectiveness would be exerted by a changeover to the formation of the wage fund as a resulting or residual fund (following the example of Bulgaria). This would make it possible to combine the conditions for management that are established from above with the initiative that comes from below for changing over to collective forms of organization and stimulation of labor.

In 1985 it is intended to change a large group of branches over the better conditions of the large-scale experiment.

In general there has been no reason to expect these better conditions. The provisions in the experiment concerning scientific and technical progress do not meet the requirements of the day. It is especially bad that the organizations that carry on scientific and technical progress (institutes, design bureaus) which are included in the production associations are not experiencing the influence of the experiment. This leads to a separation of science, technology and production. It is necessary to continue research in this area.

It would seem that the changeover of a large group of branches of the national economy to the new conditions of management will improve the matter. I submit that the club of directors of Novosibirsk should not forget about the economic experiment. We shall return to it and to questions of improving the economic mechanism in the future.

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## DIRECTORS QUESTIONED ON MANAGEMENT

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 12, Dec 84 pp 72-75

[Article by Ye. Kolosova: "Five Questions to the Director"]

[Text] In the very first issue of our magazine, which began to be published in 1970, there was a survey of questionnaires about the position of the enterprise after the economic reform of 1965. The questioning was conducted under the leadership of Dr of Economic Sciences R. G. Karagedov (Institute of Economics and Organization of Industrial Production of the Siberian Branch of the USSR Academy of Sciences). Its task, as the author pointed out, was "to look at the key measures of the reform through the eyes of the economic manager who carries out in practice the task of restructuring the management of the enterprise." At that time 241 production managers answered this question in the questionnaire.

Almost 2 decades have passed since then. The work for improving the economic mechanism in the country continues. Following its tradition, the editorial staff decided to reveal the collective opinion of the managers of enterprises regarding a number of questions that interest it. On the basis of the questionnaire drawn up by the same author in the Institute of Economics and Organization of Industrial Production of the Siberian Branch of the USSR Academy of Sciences, directors of enterprises were asked five questions. The answers that came in were processed by workers of the sector of the economic mechanism.

Directors of 60 enterprises in various cities and republics of the country were questioned. Among those who responded were representatives of large, medium-sized and small enterprises of various branches of the national economy in 15 cities (Baku, Barnaul, Dnepropetrovsk, Kharkov, Leningrad, Ivanovo, Novosibirsk, and so forth).

Answers were received to the following questions:

1. In our press we more and more frequently encounter the opinion concerning the expediency of essential expansion of the economic independence of cost-accounting enterprises (production associations). Do you support this opinion?

Variants of responses:

Yes, I support it	-- 96 percent
More yes than no	-- 4 percent
No, I do not support it	--
Other answers	--

2. During the past 2 or 3 five-year plans have you noticed an appreciable expansion of the economic independence of enterprises and the rights of their directors?

Variants of responses:

Yes, I have	-- 9 percent
No, I have not	-- 53 percent
More to the contrary	-- 30 percent
It is difficult to answer	-- 8 percent

3. How frequently in your work practice do the existing instructions and provisions (or even a part of them) enter into contradiction with the considerations of economic expediency?

Variants of responses:

Practically never	--
They contradict them rarely	-- 26 percent
They contradict them frequently	-- 57 percent
Practically all the time	-- 14 percent
Other answers	-- 3 percent

Among the answers to this question there were also the following: "Not very frequently, but with respect to issues that are important for production."

4. In what area, in your opinion, does one especially feel the inadequacy of the rights of the director of the enterprise (production association)?

Variants of responses (since it was possible to note several variants, the sum of the answers is more than 100 percent):

Production planning (volumes, products list)	-- 61 percent
Capital construction	-- 48 percent
Price setting	-- 3 percent
Labor and wages	-- 65 percent
Other answers	-- 5 percent

"The director has no rights in a single one of the aforementioned areas of the activity of the enterprise," wrote one of the people who responded to the questionnaire, apparently emphasizing the need to expand the rights in each of them. But still the most passionate responses had to do with the condition of planning. "In the system of planning and accountability everyone has filled in the planning indicators. Most of the workers in administration, technical

services and workers of shops are engaged in the processing of these indicators and the drawing up of reports from them. It is necessary to decisively restructure the system of planning production and accountability." "I think that it should be reduced to indicators of the products list and profit".... "I consider it necessary to improve planning in the country as a whole and to coordinate what is desired with the actual resources, and then many of our problems will fall away".... "It is necessary to raise the level of planning. Smooth daily operation of production without rush work leads to increased labor discipline, production, product quality and satisfaction of the workers (including the manager) from their contribution to the overall cause"....

Among the other answers were the following: "For the enterprise it is important to have prompt payment for the products that are delivered and they should be included in the sales plan".... One of those who answered expanded the list of rights to include technical re-equipment, the development and delivery to production of new items, social development of the collective, financial support for production (the determination of the necessary amounts of normed circulating capital), and so forth.

5. In general, do you consider expansion of the economic independence of the enterprise to be a key problem in improving our economic mechanism in the present stage?

Variants of responses:

Yes, I do	-- 47 percent
This is one of the central problems	-- 42 percent
No, I do not	-- 3 percent
Other considerations	-- 8 percent

One of the directors justified his affirmative answer as follows: "Without solving this problem it will be difficult to count on any radical improvement of the economic mechanism"....

Those who do not consider this problem to be a key one pointed to another one which is central in their opinion: "The enterprises lose more from shortcomings in labor discipline".... "After the problem of strengthening and improving labor and production discipline, this problem is the next in importance"....

In conclusion let us give an excerpt from one of the letters that were sent to the editorial staff: "Your questionnaire touches upon such crucial and complicated issues that there can be no simple answer to these questions (even taking into account the three-four variants that are offered). But in and of itself this attempt to sense the mood of the managers of enterprises deserves support."

The editors thank all those who answered the questions on the questionnaire and wishes them success in their work.

FOOTNOTE

1. For more detail about this see the article "Economists Must More Actively Influence Production," EKO, No 11, 1983 (editor's remark).

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## OPPOSING VIEW OF ECONOMIC STIMULI EXPRESSED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 12, Dec 84 pp 77-95

[Article by Ye. G. Yasin, doctor of economic sciences, professor, Central Economics and Mathematics Institute of the USSR Academy of Sciences (Moscow): "Public Property, Economic Stimuli and Khozraschet"]

[Text] The majority of economists and businessmen are in favor of increasing the role of economic stimuli. There are, however, opposing opinions: economic stimuli are far from always effective, and sometimes they lead to results that are not the desired ones. Remunerations are paid because the indicators on which they depend are quite good, but the final results turn out to be not so good. Moreover, there are frequent cases of claims for special payment for performing normal job duties. There are incentives for thriftiness, but still there are more and more cases of inefficiency, uneconomical expenditure of material values, direct theft, and the utilization of state funds and the job position for private interests (open any central newspaper).

This means that something in our actions contradicts the actual economic ties. In order to analyze the reasons for the weakness of economic and other stimuli and to reveal the factors which impede their utilization in keeping with the principles of developed socialism, let us turn to problems of the development of socialist public property.

Public property is our great conquest. "Everywhere where proletarian revolutions have been victorious, public ownership of the means of production in one form or another has become the main factor in the existence of socialism, both its support and the main source of its progress." Additionally, the "revolution in property relations can certainly not be reduced to a single act as a result of which fixed production capital becomes public property. To obtain the right of the owner and to become an owner--a real, wise and thrifty one--are far from the same thing."<sup>1</sup> In order for everyone to feel that he is the owner of public property and to act as an owner, it is necessary to have forms of public property and methods of managing it which correspond to the conditions of the modern stage of material-technical, social and spiritual development. As K. U. Chernenko said at the April (1984) Plenum of the party Central Committee, "We are now

beginning comprehensive improvement of the system of management of the national economy and are searching for new forms and structures of economic activity."<sup>2</sup>

#### Property: Economics and Law

One of the key provisions of Marxist economic theory is this: property is a relationship among people which is concealed behind a relationship between people and things. Somebody's appropriation of things--objects of consumption or means of production--at the same time means taking them away from other individuals.

Appropriation in one form or another is a necessary aspect of the production and consumption of material goods, and it is an economic aspect (economic relation) which always accompanies economic processes, regardless of the social form in which they take place. Therefore appropriation is more a generic concept with respect to its forms, including to property. There is some point in considering, in addition to property, such forms of appropriation as utilization, disposal and ownership. Let us note that these concepts are out of favor with the majority of economists because of their legal origin; many see in their utilization an undermining "by legal fictions" of the in-depth analysis of relations between people with respect to production and the distribution of material goods. As concerns property, it can perhaps be regarded as an economic relation, but with a stipulation: in order to understand one form of property or another it is necessary to grasp the entire system of economic relations with which it is associated.

One cannot but agree with such a judgment, but still it leaves one with a feeling of dissatisfaction. Property becomes an intangible concept and also a kind of "legal fiction." In any case, it is difficult to relate it to those crucial problems which we are discussing.

We shall proceed from the idea of utilization, disposal, ownership and property as economic relations. There are many arguments in favor of their study by economists. Thus the correctness of the application of one concept or another depends not on its origin, but on its ability to serve as a useful instrument for analysis. It seems that the aforementioned concepts are especially fruitful in an investigation of public property since they can be used to study its complicated structure more deeply.

K. Marx thought that for any legal relation there is a corresponding real economic relation (although the reverse is not always true). Here is what he wrote about private property in commodity exchange: "...Even with undeveloped barter the exchanging parties tacitly recognize one another as equal individuals and owners of the goods they are exchanging;... This actual relation, which arises only because of the exchange itself and in the exchange, later acquires legal form in the agreement and so forth; but this form does not create either its own content and exchange or the relations of people to one another which exist in it, but vice versa."<sup>3</sup>

Real economic relations (here, relations of commodity exchange) are expressed mainly in the fact that the subjects grant their contracting agents the

possibility of accomplishing various actions (transferring one commodity in exchange for another), agree with his actions and expect from him particular actions in the future (for instance, having received a commodity which belongs to the other and having given him one's own, he does not ask for it back). Incidentally, the taking of goods without reimbursement is also inherent in economic relations, but not in commodity relations but, for example, in feudal relations.

In order to utilize goods and dispose of them at one's own discretion, the subject must have confidence that those around him will not oppose his actions, will not make claims and will not resort to palpable sanctions. He utilizes the resources in his own interests, either expecting a normal reaction or being in a condition to repulse potential threats. He can count on the protection of the law only if he legitimizes the actual relations that are taking shape or are being formed. In essence, the concept of appropriation reflects the totality of social conditions that are necessary for the subjects to accomplish any actions with respect to limited resources.

### Forms of Appropriation

It is important that such forms of appropriation as utilization, disposal, ownership and property can be regarded not only as legal, but primarily as real economic relations.

Utilization is a form of appropriation which presupposes a totality of conditions of consumption (industrial or nonindustrial) of limited resources. By its nature utilization is usually individual: to consume a good or to utilize it at the same time, as a rule, is possible only for one subject. The right to utilize something is not identical to real utilization. Sometimes a subject has the right but does not have the opportunity to utilize a good, if the legal norms diverge from the actual economic conditions. And, conversely, a subject who has not been granted a legal right can consume a good if he has the actual capabilities and is not afraid of sanctions for his actions, since they will not cause a reaction from those around him. The odious figure of the petty thief can serve as an illustration.

Disposal is a form of appropriation not for consumption, but which means the possibility of other actions using limited resources--sale, free or paid transfer to other subjects (including for a time); in general the possibility of distributing resources, controlling them or regulating their utilization by others. Disposal is thus always related to control and decision-making.<sup>4</sup> As distinct from utilization, disposal is not individual. It presupposes the possibility of distributing a multitude of functions among several subjects, each of which can dispose of the resources only partially, within the limits of the area of control available to him.

Disposal and utilization are not only compatible, but in real life they are inseparable. Utilization already presupposes a certain real possibility of disposal. On the other hand, the real possibility, if only partial, of disposal of one resource or another, which is conditioned by the subject's filling particular roles in economic relations, increases its status and thus potentially makes it possible to utilize this status in his own interests.

When the subject has a high status people around him are usually inclined to grant him great possibilities. Such real relations can also take form when the legal norms do not recognize them or even consider them criminal.

A specific form of appropriation is ownership. In analyzing this a well-known specialist on problems of property noted, referring to Marx and Lenin, that one cannot confuse ownership and property.<sup>5</sup> Property presupposes combining all possibilities of utilization in disposal. But ownership combines with utilization only part of the functions of disposal, and then under certain conditions. Thus feudal ownership allowed disposal of land only under certain conditions which regulate the relations of the lord, the vassal and the serf. Property is a form of appropriation that combines utilization and disposal means also the possibility of transferring the object of property for utilization, disposal and ownership to other subjects without loss of the rights of property and the establishment of rules by which they must be guided.

It is typical of modern property relations to divide the subjects of property, utilization and disposal, which are conditioned by the public nature of production and its concentration in large management organizations. This aspect is especially important. Let us recall that in classical commodity production there was a predominance of relations between private owners. But now in the foreground are relations within the boundaries of public or collective property--utilization, disposal and ownership.

#### Property and Economic Stimuli

Formulations and theoretical considerations help to see the connection between property relations and the effectiveness of economic stimuli. Property, as the most complete form of appropriation, means that the subject, having the opportunity to carry out any actions on the resources, can fully appropriate the useful result of his actions, but he also bears complete material responsibility for their consequences. He is given all of the advantages of effective decisions and all of the losses in the case in the event of failure. Other forms of appropriation limit to one degree or another the freedom of actions of the subject, but at the same time they reduce his actual liability, envisioning certain guarantees on the part of those who limit his freedom of actions. There thus exists a correspondence between responsibility and the possibilities of utilizing or disposing of resources.

The possibility of appropriating the useful result in combination with the expectation of material losses in the event of unsuccessful actions also serves as a basis for those motives for effective management which can appropriately be called internal economic stimuli. They are internal because they come from the subject himself and characterize him as the master. They are distinguished from various kinds of incentives from outside, which in one article were correctly called external stimuli.<sup>6</sup>

#### Public Property and the System of Management

Socialism develops its own economic motivations which are organically inherent in it. They are based on public property as a decisive feature of the

socialist method of production. In V. I. Lenin's words, workers become the laborers and employees of one "nationwide syndicate," and at the same time they are the co-owners. This is a decisive prerequisite for the formation of a principally new attitude toward labor and toward public resources, but it is still not an automatic guarantee of a truly economical attitude on the part of all workers toward public property. It is necessary to keep in mind the fact that the conditions for the formation of high labor activity and effective economic motivation cannot be the same for the stage, say, of industrialization as they are for the state of the perfection of developed socialism. Public property relations must develop correspondingly.

Let us recall: the legal approval of private ownership came after the spreading of real commodity and capital relations. And socialist property begins its existence with legislative acts of the new authority of the workers after which follow "collectivization in deed." The incipient socialist economy relied on collectivization which had already been achieved under capitalism, and also on the decisions of the proletarian state which reflected the theoretical ideas that were accepted at the time. Among them were two major ones:

the origination of new motives for labor activity and an economical attitude on the part of everyone toward public property follows directly from the transformation of each individual into a co-owner;

the possibility and need for planned management. Here one discovers the link between public property and planned management of the economy, which is not only formed on the basis of new property relations, but also realizes them in concrete forms. The question of how to manage public property is to a certain degree a question of real property relations and the economic motivations which they engender.

Initially planned management of the national economy was conceived in simple forms which were obvious at first glance and were in principle different from the preceding ones: to give the assignments to the production units and then to distribute the results taking into account the needs of the participants in public production and the established system of priorities. Since that time the system of management of the national economy has undergone various changes, but its key units are still detailed planning of assignments for specific units to produce products and direct distribution (funding) of material resources and also the assignment of consumers to suppliers. There is a widespread opinion that such methods constitute the essence of centralized planning. From the standpoint of public property relations this means that the state, as the owner, allows the enterprises and their labor collectives to use the means of production which belong to it. And the functions of disposing of the products and the material and financial resources are assigned to economic management organizations which are acting on behalf of the state. In implementing the decisions which it adopts reliance is placed on administrative methods which presuppose a ramified hierarchical structure of management. The main role in it is played by relations of subordination. They can be established according to various indicators (branch, territorial), but the strict hierarchy is a matter of principle for otherwise it would be difficult to distribute responsibility.

But the more complex the controlled object, the more ramified the hierarchical structure and the more difficult it is to coordinate the work of its units.

There is no doubt that such a management system has certain merits, which are especially appreciable under extreme conditions and also when bringing new masses of resources into economic circulation. Thus it makes it possible to directly realize social priorities, limiting the utilization of resources which are in short supply in less important productions. If only because of this the socialist society always retains these methods of management in its arsenal. But the higher the level of economic and social development, the more limited are the factors of extensive growth and the more persistent the requirements for intensification of production and the more marked are its shortcomings. They give reason to think: is the only possible organization that of centralized planned management of the national economy?

### The System of Management and Economic Motivations

Let us take a look at how economic motivations are formed in such a system. We shall be speaking not about those motives which are generated by socialist public property as such and are reflected in a thrifty attitude toward public property, high labor activity and initiative which is directed immediately toward nationwide goals. Along with these the economic subjects have other motives--as a result of the activity of the system of management and the economic relations inherent in it.

First, the separation of functions of disposal from utilization essentially limits the independence of the users, and this means also their initiative, which is why there are not such strong stimuli for an economic attitude toward public property. Further, it is thought that the useful effect is realized by the society as the owner, and the user participates in it only to the extent that his activity is encouraged by various external stimuli. The users cannot properly bear economic responsibility for they are carrying out decisions which they did not make. Consequently, the society must also be responsible for making reimbursement for their losses, thereby guaranteeing the existence of the enterprises and paying their workers' wages, regardless of their effectiveness. If an essential limitation of the possibilities of the labor collectives to take advantage of the results of effective work weakens the positive stimuli for economic activity, the guarantees on the part of the state, which are conditioned by the limited economic responsibility, reduce the force of negative stimuli as well.

In the second place, although formally and legally the enterprises and their workers do not dispose of the resources assigned to them, in actuality they have such opportunities because the resources are in their hands. And, naturally, they strive to expand these opportunities: the greater the possibilities of disposing of resources, the better and more reliable the conditions for their activity. The simplest path is not to fully reveal the reserves, to achieve a reduction of planned assignments and norms, and to exaggerate the need for resources, the more so for resources which are in short supply. Such phenomena are becoming the initial point for an artificial shortage, whose diverse negative consequences give abundant food for scientific discussion and articles in the press. At the same time

administrative methods of managing production and distributing resources in and of themselves do not provide motivation for neutralization of the negative tendencies. It is necessary to apply additional, external stimuli.

In the third place, the organizations which are responsible for functions of disposing of property strive to prevent negative tendencies. But they manage to influence the enterprises mainly by those same administrative methods, instructions and prohibitions which, when they are applied too frequently, are transformed into guardianship. Moreover, being a unit in the management hierarchy, the management organizations end up in approximately the same position with respect to the higher levels as the enterprises are with respect to them. Their work is evaluated in terms of the activity of the production units under their jurisdiction, and therefore they are interested in having everyone fulfill the assignments, and with "good" indicators. And here it is just as advantageous to conceal reserves as it is to adjust the plans or redistribute resources in favor of the units that are lagging behind. Favorable conditions are creating for reducing demandingness in relations among management organizations and enterprises under their jurisdiction, and also in interrelations among labor collectives. Compromise and coordination of the interests of the participants are frequently achieved to the detriment of effectiveness and at the expense of the society.

In the fourth place, management organizations which dispose of resources which they do not physically have in their hands cannot bear economic responsibility for the decisions that are made. If their decisions cause harm to some economic subject, they themselves are not in a position to make reimbursement. Only administrative responsibility is real. But in the complicated structure of management there are always possibilities of avoiding such responsibility, of shifting it to the higher organizations (along the vertical) or to other departments (along the horizontal). Hence the viability of bureaucratism, red tape and irresponsibility, when it is so difficult to find the parties that are actually guilty of one omission or another.

In the fifth place, disposing of resources offers certain opportunities of deriving advantage from this. It is not simply a matter of abuse of one's position. We are speaking of something greater. Thus the functions of planning production and distributing resources are separate at the level of the branches: the former are carried out by the ministries, and the latter, as a rule, by organizations of the USSR Gosstab. This is certainly not a reason for planning production and distribution of products separately but, on the contrary, both tasks should be carried out together. But the functions are separate. Since as soon as the distribution is entrusted to the producing ministry one soon discovers its inclination to take care of its own enterprises first.

We are coming to the conclusion that the sale of public property by methods that are based on formal division of the functions of utilization and disposal objectively and inevitably leads to a limitation of the independence and responsibility of the production units. The economic responsibility is borne not by those who have made wrong decisions or have managed unsatisfactorily, but by the society as a whole, and above all by the labor collectives that are working best. Clearly, this does not contribute to initiative or an

economical attitude toward public property. If one unit or another tries to produce less and receive more and if it does not bear full responsibility for the results of its activity, the society is forced to pay for the labor without close contact with the final results, to cover losses and to write off debts. Thus money goes into circulation without being actually materially covered. If in addition to this the prices do not react to the ratio between the quantity of money in circulation and the goods, there is a disturbance of the material-financial balance of the economy and a chronic deficit begins to form.

Of course the negative motivations that have been noted should not be overestimated. They exist along with other, undoubtedly positive motives, which are engendered by the atmosphere of socialist public relations--those such as the desire that is inherent in workers to perform their duties conscientiously, to find satisfaction in intensive creative labor, and to equate personal interests with the interests of the collective and the society.

It would be wrong to attribute all problems we encounter today to the system of management of the economy. Nonetheless large reserves lie in improving it. This is why the party is decisively setting the task of radically restructuring the economic mechanism. As K. U. Chernenko pointed out in his speech to the electorate on 2 March 1984, the task "does not amount simply to elimination of the shortcomings in the activity, as it were, of managers doing their job. It is necessary to arrange things in such a way so that the initiative and creativity of the broadest masses of workers are revealed in all their productiveness and force."

#### Public Property and Cost Accounting (Khozraschet)

The conclusion suggests itself: methods of management of public property that are based on the division of the functions of use and disposal of it weaken economic motivations. They condition the viability of individual phenomena of shady economics, impede control and do not allow management to assume a truly nationwide character.

One should apparently search for forms and methods of management of public property which, corresponding to the conditions of developed socialism, will meet two requirements.

First, they should correspond to the principles of socialist public property (without replacing it with group property which has been publicized by anarchic-syndicalist theoreticians). The subject of the property is the society as a whole. To accomplish this, as V. I. Lenin pointed out with respect to land, it is enough for the state as the representative of the society.

--to establish the rules for the use and disposal of the resources belonging to it and to make sure of their observance;

--to receive income from public resources which are granted for use and disposal by economic subjects.

Second, such methods are called upon to form an economical attitude toward public property, high labor activity and collectivism. They combine the independence of the enterprises in making economic decisions, sufficiently full economic responsibility and the possibility for the collective to achieve an appreciable effect from its activity in the national interests.

Joining together the aforementioned requirements means combining in the hands of the labor collectives the possibilities of utilization and disposal of the resources assigned to them under the conditions established by the society. If these possibilities are sufficiently broad, the enterprises regarded as a unique kind of socialist owner of the means of production which are at its disposal. An owner under certain conditions since the actual possibilities of disposing of the resources are limited by the actual owner--the state.<sup>8</sup>

The state establishes the production profile and the rules and norms for distribution of the incomes of the production units, at the same time granting them certain guarantees. One stipulation is needed here. The force of the cost-accounting stimuli in and of themselves cannot give way to the logic of the competitive battle on the random market. But under socialism frequently material motives do not have to be and should not be the only ones. They are augmented and replaced by motives of a higher order. It is important, however, for material motives not to be in conflict with economic stimuli but, on the contrary, to be reinforced by them.

Do such methods exist for managing public property? After all the economy is inclined to seize upon refined plans of office origin and can perceive only whether or not they correspond to economic reality. But there is no need to think up such methods. They were proposed by V. I. Lenin and have been reinforced by many years of practice. These are methods of cost accounting.

Indeed, cost accounting and the system of economic incentives form the most powerful mechanism which compensates for the aforementioned negative motivations, the source of which is administrative methods of planning production and distributing resources. There are many difficult areas in its operation, but without it the consequences of the negative motivations would be much more serious.

Cost accounting is based on principles of independence and self-payment which also mean a combination of the possibilities of utilization and disposal which is necessary for bearing the proper economic responsibility as well as for creating effective stimuli for increasing effectiveness. Even when production assignments and limits on resources are formed administratively, cost accounting is capable of neutralizing to a certain degree the tendency "to give less and to receive more": according to its principles, in order to receive it is necessary to pay out of what is earned, and in order to earn it is necessary to give more. Of course these qualities are the more appreciable the better the material-financial balance, the fewer the sources of nonreimbursable receipt of monetary income, and the stricter the economic conditions for management. Cost-accounting stimuli can be called internal because they are originated not from outside by various indicators but by the

circumstance that it is possible to improve the situation of the collective only as final results and savings on resources increase.

All that has been said pertains both to cost accounting of enterprises (associations) and to intraproduction cost accounting (brigades, teams and shop sections) although, of course, there are various peculiarities at various levels. The experience with the brigade contract and other progressive forms of organization and payment for labor at the level of the lower collectives fully confirms the force of cost accounting and the possibilities that lie in it of increasing the effectiveness of the real participation of workers in production management, the strengthening of collectivism and an economical attitude toward public property. But this same experience shows that the immense possibilities of cost accounting are limited by the inadequate development of cost-accounting relations at the higher levels.

The differences in the amount of independence and economic responsibility make it possible to speak about various levels of cost accounting. The highest level, the so-called complete cost accounting, is applicable for enterprises (associations) and presupposes extensive independence (including planning a large part of the products and economic ties) and also complete self-payment. A reduction of the level of cost accounting consists in deviating from these requirements and leads in the final analysis to formal cost accounting which is not capable of stimulating increased effectiveness. A weakening of the internal cost-accounting stimuli must be replaced by external stimuli--various bonuses (for fulfillment of output norms, economizing on energy, gathering scrap metal, introducing new technical equipment and so forth). But such stimuli are not only not able to equalize the negative motivations, but frequently, under their influence, change their direction. Thus incentives for fulfillment of planning indicators stimulate not only a growth of the real results, but also interest in having easy plans. Organization of socialist competition according to this principle leads to a situation where "the forces of the people are directed toward competition not with partners in socialist competition but with their own plan."<sup>9</sup> It is understandable that this only discredits the principles of economic stimulation.

#### Cost-Accounting the Economic Mechanism

There is a certain lack of confidence in cost accounting as a method that is capable of weakening centralized planning. In particular, people express the opinion that departmental interests are a consequence of cost accounting, and they refer to V. I. Lenin. The reference, however, is not altogether precise. In fact, in the work "On the Role and Tasks of the Trade Unions" under the conditions of the NEP, literally the following was said: "The changeover of enterprises to the so-called cost accounting...because of the inevitable departmental interest and the exaggeration of departmental zeal, will inevitably give rise to a certain opposition of interests between the working class and the dictators who control state enterprises or the departments to which they belong."<sup>10</sup> Therefore, Lenin writes, the trade unions are responsible for protecting the interests of the workers, rectifying mistakes and excessive growth of economic organizations.

As we can see, Lenin's idea is that under the conditions of cost accounting, when striving to reduce expenditures and increase profit, the administration can go in opposition to the interests of the workers. And the trade unions are called upon to defend these interests. In the conflict of interests there arises a situation of mutual demandingness which also contributes to increased production and improvement of the life of the workers. Lenin's instructions are extremely crucial today. But the departmental interest which he mentioned has nothing in common with our present-day departmental interests which are reflected in the tendency to "give less and receive more," to achieve a compromise with the workers to the detriment of public interests by "raising" wages without improving the organization of production. Cost accounting opposes precisely this kind of departmental interest. In general, it is not a matter of eliminating departmental interests as a phenomenon. This is impossible. Once a specialized organization is created for performing one function or another we have a department, and it inevitably develops its own interests which in some way are different from the interests of the individual workers or the goals of the society. The question is what these interests are and toward what are they directed. Lenin was speaking about a situation in which the departmental interest was drawn by conditions of cost accounting toward increasing the effectiveness, and its conflict with the interests of the workers produced results from a public standpoint. But now the monopolistic position of the ministries and departments and their insensitivity to formal cost accounting ascribes a completely different direction to these interests.

Can one assume that the fears related to the development of cost accounting are groundless? No, one cannot. On the contrary, there is reason to think that raising the level of cost accounting will produce a negative result if this is not accompanied by a restructuring of planning, supply, price setting, the finance and credit system and wages--all units of the economic mechanism. Now it is adapted for methods of planning for specific units, and its own units are attached to one another.<sup>11</sup> Cost accounting has become adapted, to be sure, at the price of simplifying it to the point of its being formal.

Let us take price setting. Say the independence of the enterprises is broad and they themselves decide what to produce. The decision is made taking prices into account. And the price reflects not the useful effect of the product and not the persistence of the demand for it by the society, but the actual production expenditures or at best the average branch expenditures, and more frequently--individual expenditures. This is why it is called the "expenditure" price.

This price, however, does not suggest to the enterprise what it should produce and in what quantity. It shows the advantage of the expensive products, but certainly not the products that are most needed by the society. This, incidentally, is what has happened since 1965 when the independence of the enterprises was expanded while retaining the "expenditure" prices: during 1966-1970, with an increase in production of 42 percent, a price increase of 10 percent and an insignificant reduction of production costs, profit increased 3.36-fold. A decisive factor was the progress in the assortment in favor of more profitable products. Profitable, but not necessarily needed.

Complete cost accounting presupposes prices of planned balance which take into usefulness and the availability of products and thus reflect not the actual, but the socially necessary expenditures. These prices are more difficult to determine centrally and it is not expedient to determine them for all products. But they are the only ones that are capable of correctly orienting the enterprises which form production plans independently.

Let us say that a practical method has been found for forming the prices for planned balance.<sup>12</sup> Is this sufficient? No, it is not either. The enterprises are working under objectively different conditions--natural, with respect to technical level, and with respect to personnel skills. Complete cost accounting then leads to the differentiation of enterprises, and independently of their own efforts. This is confirmed by the experience in improving the economic mechanism in Hungary and Bulgaria. But differentiation, if it does not envision the necessary measures, gives rise to the temptation for administrative intervention in order to restore justice: to take from some and give to others which are lagging behind not by their own fault. But thus cost accounting and its stimuli were again undermined.

It is apparently necessary to have a system of payments for all kinds of production resources, planning of normatives of payments with an equalization of objective conditions for management, and incentives for economizing on resources. In other words, expansion of the independence of enterprises and the development of cost-accounting relations as a decisive direction for strengthening socialist public property and an economical attitude toward it on the part of the workers rely on a comprehensive restructuring of the sphere of management of the national economy, which was set forth as the central task at the December (1983) and February and April (1984) plenums of the CPSU Central Committee. A key aspect of it is increasing the role and raising the level of centralized planning. This is what is called upon to form scientifically substantiated prices for planned balance and a system of economic normatives, including normatives of payments for production resources. We are thinking about planned formation of economic conditions for strengthening cost accounting, increasing labor activity and developing an economical attitude on the part of the working man toward public property.

This is not a simple task. It is simpler and more customer to plan numerous indicators in physical terms and in rubles. But this task must be carried out.

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## PROFESSIONAL MANAGEMENT CONSULTANTS SHARE VIEWS

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 12, Dec 84 pp 97-98

[Introduction to articles that follow]

[Text] Management consulting is winning its own positions, consistently, if not as quickly as necessary as we should like and as is necessary. The need for it is being felt more and more strongly by enterprises and associations in connection with the course toward intensification, the higher technical level and the complication of production: for under these conditions the significance of each management decision increases.

Estonian scientists and specialists are doing a good deal of work on the development of consulting and the expansion of its capabilities. EKO has already written about their practical activity and about their international ties with foreign consultants, particularly with the Finnish consulting firm "Mak-Raster," with which it has held several joint seminars in Tallinn and Helsinki.

Recently the Estonian consultants were visited by a group of specialists from the international consulting firm Habberstadt, one of the largest in Europe. At the meeting in Tallinn they discussed problems of practical improvement of consulting activity and making it more professional. At the request of EKO the director of the Planning and Design Bureau for Management Systems of the Estonian SSR Ministry of Light Industry, Candidate of Economic Sciences Yu. Pyarnits, the deputy director of the bureau, Candidate of Economic Sciences Ya. Leymann, and the vice president of the consulting firm Habberstadt, Dr M. Lagerquist discussed the possible ways of developing consulting activity.

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## SUCCESS IN CONSULTING WORK DISCUSSED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 12, Dec 84 pp 98-103

[Article by Ya. Leymann, candidate of economic sciences, deputy director of the planning and design bureau for management systems of the Estonian SSR Ministry of Light Industry (Tallinn): "Factors Determining Success in Consulting"]

[Text] Management consulting already has a history in our country. In order to respond to the question of how to proceed further and single out the major factors in its development, let us briefly analyze what has been done and what problems are still to be solved.

In Estonia the pioneers in management consulting were the chief of the department for management and planning of the Tallinn Polytechnical Institute, Prof R. Kh. Yuksvyarav and his students. They created the first consulting center at the institute. Subsequently, developing this activity, his students organized three more consulting centers--at the Interbranch Institute for Increasing Qualifications of Managers and Specialists of the Estonian SSR National Economy, the Planning and Design Bureau for Management Systems of the Republic's Ministry of Light Industry, and in the republic Estkolkhozstroy Association.

In the initial period of the development of consulting in the republic--the second half of the 1960's--we worked in two areas: improvement of organizational structures and the utilization of the human factor in production.

At the beginning of the 1970's, as the knowledge of the enterprise managers concerning problems of management grew deeper and they developed greater interest in these problems and as management methods improved there appeared a new area in consulting--technology and management procedures, and then management personnel as well. There arose a need for diagnostic investigations of enterprises and associations in order to determine their strategies for development. But the previous areas of consulting are continuing to have an effect.

Thus the sphere of activity of the consultants is becoming broader and more responsible. They have to work a great deal on increasing their creative potential. The republic is conducting a whole series of seminars on consulting, including with the participation of foreign firms. In 1971 contacts were established with the Finnish consulting firm Mak-Raster, which are continuing up to the present day in the form of joint seminars.

In the second half of the 1970's seminars were held in Moscow on problems of management, which turned out to be very useful to our consultants. In 1978 the Tallinn Polytechnical Institute organized information on management consulting, after which the first materials on consulting practice were published in Russian.

The second Tallinn seminar which was held in 1982 played a certain role in the development of consulting activity. It was conducted through the efforts of all four consulting centers in the republic. The same can be said of the all-union conference on management on the basis of target programs in 1983, which was organized by the Institute of Economics and Organization of Industrial Production of the Siberian Branch of the USSR Academy of Sciences and the Pavlodar CPSU Obkom on the basis of the Pavlodar tractor plant, which has consulted with Siberian scholars.

Unfortunately, all of the aforementioned meetings only confirmed the fact that almost none of the people engaged in management consulting were pure consultants, that for all of them this activity was an additional activity and not their main one. They could only allot part of their time from their main job for consulting work. During this time there did not appear a single independent organization for management consulting. As before, on the official lists of occupations there was not an occupation called "management consultant."

And anyway, why should scholars and specialists engage in this troublesome, difficult and responsible work which is much more labor-intensive than reading lectures, conducting research or writing articles or even books? They are attracted by the fact that consulting makes it possible for them to bring their ideas into reality, to test them and practice, and to see the concrete results of their labor directly in production.

Production managers frequently have questions concerning management which are of a purely applied nature. They need to have someone evaluate, with an objective, competent view from outside, situations which arise in production. Scientists cannot always be away from their laboratories or departments for a long time in order to carry out this kind of work. And they do not always have the knowledge of the concrete production associations or the necessary production experience.

It would seem that it would be more convenient for organizations like our PKB to handle consulting activity. And we actually do engage in it and conduct work both for rendering assistance to enterprises in solving management problems and methodological problems (in order to develop the theory and practice of management consulting). But here too there are contradictions. These include the branch approach, the corresponding frameworks, the existing

policy for planning economic agreement work, accountability, the salary level and the skills of the consultants.

Because of the organizational indefiniteness of consultation work and the lack of a legal status for it certain specialists have lost their enthusiasm. Some of them are leaving for good. Of course they are getting away from the business which had attracted them, but they are also receiving work with greater prestige and more reliability. They are becoming high managers of enterprises. Production is glad to hire them since it is known that consultation activity produces a great deal of knowledge in the area of economics and management. Others are leaving consulting work and going into purely scientific activity.

At the same time the demand for the services of consultants and the interest in their work on the part of party, economic and scientific workers are constantly increasing. In 1982 PRAVDA and SOTSIALISTICHESKAYA INDUSTRIYA wrote about management consulting. Various problems concerning consulting have been raised repeatedly in EKO. On the basis of all that has been said I shall try to single out the main factors in the further development of consulting work.

The first factor--expansion of the rights of the enterprises and associations.

Management consultants work at the level of the enterprises and associations. But many management problems go far beyond the framework of an individual enterprise. The field of activity for the consultant remains narrow and his possibilities of helping are modest.

Because of the course taken in the country toward expanding the rights and responsibilities of enterprises and associations, the production manager must make responsible independent decisions which determine not only the present day, but also the future. He will need qualified advice and sober, objective and competent evaluations from the outside.

While in 1984 only individual branches were included in the large-scale economic experiment for expanding the rights and responsibilities, in the future this work will be carried out everywhere in industry. I believe that by the 1990's the management consultant will be one of the most necessary occupations.

The second factor is the legal definition and the organizational bases.

In the near future there will be no problem that is more significant for consulting activity than to give it legal definition. The first stage--recognition of the usefulness and the need for management consulting--has already passed, and a certain amount of promising potential and interesting experience have been accumulated, but in terms of legal status the organization of consulting still remains at the same level where it was at the beginning.

Consulting should become an independent professional activity which should be carried out on a cost-accounting basis in special organizations. With this

arrangement consulting becomes more responsible and its results become greater. It is quite possible that consulting organizations can be created under scientific centers for management. There is an opportunity for this at the Siberian Branch of the USSR Academy of Sciences, where the Institute of Economics and the magazine EKO devote a great deal of attention to problems of management and where there is the well-known Computer Center and many other institutes.

Consulting organizations can also be created in republic academies or directly under the jurisdiction of the State Committee for Science and Technology, which is responsible for the development and improvement of systems and methods of management.

Interesting experience has been accumulated in Bulgaria where management consulting is developing successfully within the framework of the Association of Industrial Enterprises. I consider it quite possible that in the near future our enterprises too will create regional organizations for management consulting on a cooperative basis. It is important to add that such organizations should be interdepartmental. Let the enterprises of the region and the solid scientific organizations check on the course of the matter in the first stage. Time will suggest our future steps.

The third factor is payment for the labor of consultants.

Now there are all kinds of methods of paying for consulting work! In keeping with economic agreements and through passes from the Znaniye Society (as for reading lectures), and as for work in combined jobs (when the consultant is temporarily included on the enterprise's staff).... In none of these cases is the payment directly related to the final result, and the forms of payment do not always coincide with the letter of the financial instructions, which causes moral harm to consulting activity.

The organization of payment for consulting work in the future should be related most directly to the legal status of the consulting organizations. If it is an independent cost-accounting organization, it will work on the basis of economic agreements with the enterprises and have its own staff organization chart. The payment for the labor of consultants should be determined by their qualifications, their prestige and the significance of their profession. I wish to emphasize that the system of wages should be sufficiently flexible to guarantee a good consultant at least the wage level which is the average for the management personnel with whom he is consulting.

The fourth factor is skillful selection and training of consultants.

Although I am naming this factor last, it is a decisive one in the development of consulting work. The future consultant should be a specialist with experience in practical work in management and he should have good theoretical training. The future consulting organizations should draw from the main management personnel who are up to approximately 35 years old. They should be given intensive theoretical training for a year or a year and a half and have the opportunity to become familiar with the largest possible number of leading enterprises, and after this they should be introduced into the work of

consultants. It is not justified to place too much hope in the skills of VUZ instructors and scientists as management consultants. They have become accustomed to another style of work, as a rule, and do not have management experience or are not ready to be reoriented. Instructors and scientific workers can help former managers to become consultants. They can work side by side with the consultants and be included directly or as people with combined work on the staffs of consulting organizations. I think that promising young leaders will not want to be consultants as long as the profession of "management consultant" is not recognized, and the career of the consultant is not just as normal a phenomenon as any other career.

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## MANAGERS TAKE ADVANTAGE OF CONSULTING SERVICES

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 12, Dec 84 pp 103-109

[Article by Ye. Leonidova: "The Manager Goes to the Consultant"]

[Text] The weekly operations and dispatcher conference is unduly prolonged. The shop chief who has been speaking for a full half hour has been trying to place the blame for his failure to meet his schedule on somebody else. He has been met with objections from the floor and then each opponent has taken over the floor and, summing up counterarguments, has spoken in the same spirit. It would seem that it was impossible to break the closed circle. They had not come a single iota closer to a solution. The director was uncomfortably looking at his watch (he had to go to the party raykom in 20 minutes). But he did not want to cut the conference short and make a decision. He suggested concluding the discussion of the remaining issues tomorrow, after work.

The people departed with poorly concealed vexation that they would have to come back again.

And how was it before when he had participated in these conferences in a different role? Having restored the picture to his memory, Khel'dur Kukkk came to the conclusion that even before they had proceeded in exactly the same spirit. But his attention--first as a division chief and then as the head engineer--was concentrated on those problems which bothered him and he thought least of all about the style of the conferences themselves. Moreover somewhere, at some point in the conversations and debates, his predecessor was able to put a stop to these arguments without causing offense and suggest a ready solution. The former plant director was an excellent manager: energetic, thinking, strong-willed, consistent and persistent. He preferred to form decisions himself and was very demanding when it came to carrying them out. Since he enjoyed immense authority no one contradicted his management methods. Yes, in fact, it seemed to everyone that it was impossible to manage in any other way.

Then a new director, Khel'dur Kukkk, took over the helm of management. This was during the 1970's when the science of management began to develop intensively and when the level of general, technical and management culture of the specialists and workers became higher. The new director thought that it

was impossible to manage in the former style. Moreover, this style did not coincide with his personal position. He was by nature a man of a different type. Kh. Kukk did not consider it possible to demand that workers carry out an order or decision if he was unable to convince them of its correctness. He wanted for the subordinate himself to suggest a solution. Let it be even a questionable one, at least it would express the position of the worker. He could do anything he wanted, but not thoughtlessly try to place a decision on someone else.

The first question with which the director of the Tartu Experimental Automotive Repair Plant addressed the management consultant in 1977 was this: "How does one arrange it so that he, the director, and the management personnel, as those two fellow travelers in the classical arithmetic problem who left points A and B walking toward one another, can meet more rapidly? How does one accelerate the acceptance of the management style they suggest?" As his adviser the director selected Yaak Leymann, whom he had met more than once: first at the plant, at a time when the latter, still being an instructor in the department of management and planning of industry at the Tallinn Polytechnical Institute, participated in carrying out a research project, and then, after temporary duty in scientific centers and consulting firms of Finland, worked in the Tallinn Planning and Design Bureau of Management Systems of Light Industry in the Republic.

Leymann invited the director to attend 3-day special-purpose courses for managers which were being held at the training combine of the Estonian SSR Ministry of Light Industry, and which were devoted to management style, and then he visited the plant, spoke with specialists whom he knew, met with new people and came to the following conclusion: in the collective there is a lack of understanding on the part of certain people of what the new director wants from them and there is a certain amount of cautiousness regarding innovations, which always happens when the new and the traditional come into conflict. But it will not be very difficult to overcome the psychological barrier because the main thing here is respect for the new manager. They have known him here for many years as an intelligent specialist, a division chief and the head engineer. They have worked side by side with him for the success of the enterprise, and shared their joy when their small shop achieved the highest positions in the republic and became known throughout the city. But it is difficult to surprise the natives of Tartu with anything, these people who are so proud of their university, their agricultural academy, the Vanemuine music and drama theater where people come from all corners of the republic to see performances, and their large enterprises. But still the Tartu residents noted that the physical plant of the automotive repair enterprise was beginning to look better, that the paths and flowerbeds on the plant territory would bring honor to a good gardener and decorator (1,500 trees and 4.5 hectares of lawn, you will agree, are something you do not see at every large enterprise!). A comfortable settlement for the collective of repair workers grew up next to the plant, and it was constructed mainly through their own efforts. The kindergartens and day nurseries were recognized as exemplary, and were awarded the appropriate certificates from the city authorities....

"I think that in order to seriously agree on procedures and methods of decision-making, and to clarify and bring positions closer together, it is necessary to be completely separated from current affairs for a day or two and to concentrate only on this problem," suggested Leymann. "It is understandable that the director's office is not the best place for this kind of concentrated discussion. In order to make sure that nobody bothers or distracts people, it would be desirable to meet somewhere outside the plant territory."

"But how does one leave the plant for a day or two?" Kukk was doubtful.

"Both you and your assistants go on vacation for a month, and you also go on business trips. Turn the management work over to your deputies for a day or two as you do all the time when you are on vacation," the consultant convinced him.

And the director made his decision.... The consultant had not delivered the traditional lectures with the presentation of general provisions concerning the theory of management and he had not heaped up abstract examples. He analyzed the plant conferences and the methods of decision-making, referred to experience which was familiar, using examples described in literature. Then he asked the plant specialists to select those questions which they considered possible to discuss within the framework of one conference, and to express their ideas about the procedure for decision-making.

The majority of them selected barely half as many problems as were usually brought up at the operations dispatcher conference. All of them referred to the fact that the "closed circle" could be broken if they thought of suggestions in advance and submitted to the management before the conference. Then the idea would be to work in a constructive direction: the person will begin to search not for facts for justification, but for possible paths to a solution. They also discuss the fact that it is expedient for all participants in the conference to wear watches. The people who are not needed can leave when they want to.

Now the weekly dispatcher conferences at the automotive repair plant do not last for more than an hour and a half. Each manager and specialist can firmly plan his next business and appointments without the fear of being delayed or being late. People have begun to search for solutions to problems independently. Many problems are resolved in mutual contacts and are not brought up before the upper level of management.

"The style and procedures for management, the decision-making methods, work with management personnel, assistance in selecting managers for specific positions--these are the problems I brought to the consultant during the first years when I was working with him," said the director. "It seems to me that the enterprise should have a permanent consultant who knows the production and the collective. Previously we worked a great deal with scientists on the basis of contractual relations. But the system of agreements seemed less effective to us. In the first place it is expensive in any case. An agreement will cost at least 50,000-60,000 rubles. This is nothing to the scientists, but to us it is a fairly large sum: with this one could do a

great deal to solve production or social problems in the collective. In the second place, the agreement is prolonged for months or even years. We are more in need of on-the-spot assistance. Sometimes we have received the scientific report under an agreement when the problem was no longer crucial. The report has lain on the shelf next to the preceding ones...."

As their cooperation with their permanent consultants becomes stronger, plant workers begin to bring to them more and more profound production issues and to discuss their "sore spots" with them confidently. The most crucial of these at the end of the 1970's and the beginning of the 1980's was the problem of the service industries. Improvement of the interaction between main and auxiliary services bothered everyone during these years. Their dissatisfaction with one another accumulated over the years, but neither one of the sides wanted to note the difficulty in the other's work. The demands of the basic production grew from year to year, and the service subdivisions could not keep up with them. In the first place, there were not enough of them and, in the second place, they did not have a system of information concerning maladjustments and emergency down time. Moreover, there was no clear-cut delimitation of functions between the two service subdivisions--the divisions of the head mechanic and of the head energy engineer.

The consultant's group of assistants analyzed the whole chain of interconnections of auxiliary and basic productions, all of their complaints against one another and the needs of all of them. Then, in order to find mutual understanding, the consultant decided to try out a business game. There were 25 people participating in it: two-thirds of the participants were from the management of the main production, and one-third from the auxiliary production. They were assigned special roles in the game. The chief of the diagnostics shop was to play the role of the head mechanic in the game, and the head mechanic was to be in charge of the main production shop.

Ya. A. Leymann tells us about it:

I have kept all the sheets of questions and answers. It was discovered that nobody in the main shops knew precisely the actual capabilities of the auxiliary productions, and none of the chiefs of the shops could answer the question of how many electricians there were at the plant, how many of them were under the jurisdiction of the head energy engineer, and how many of them were under the jurisdiction of managers of production shops.

"Without giving the names of the people who were questioned, we made the participants in the business game familiar with the answers, heard suggestions from both groups, in which a coming together of positions was already evident, and then suggested a solution: to clarify the functions of the division of the head mechanic and of the head energy engineer, and after that redistribute the people, create a system of information and control over circumstances and emergencies and also to eliminate them, and to improve the provisions concerning incentives and payment for the labor of the personnel in the service productions. Our proposals were accepted. People were assigned to be responsible for their implementation on both sides and dates for carrying them out were established. This was reflected in an order for the plant. Things became much better. But, shall we say, not ideal...."

"Not ideal," agreed the director. "But infinitely better. It is also difficult to solve the problems of the auxiliary productions because there are not enough workers and the system of organization and payment for labor is imperfect in these services. I think that in general the division into basic and auxiliary workers is an obsolete practice. It is necessary to give the managers of the enterprises the right to decide for themselves in each specific case how to distribute their labor resources."

Having become convinced that the methods of solving the problems which were proposed by the consultant were fruitful, 3 years ago the plant workers brought up before him not operational, but strategic problems. The enterprise had to determine the prospects for technical development up to the year 2000. The solution to the problem depended not only on the plant, but also on the development of technical equipment--the Tartu branch of the State All-Union Scientific Research and Technical Institute for Repair and Operation of the Machine and Tractor Fleet.

But first a little history.

When the plant went into operation 30 years ago its main specialization was the repair of agricultural machine and truck engines for the needs of the republic's agriculture. As it turned out, 6,000 engines a year was the number which agricultural enterprises needed for it to repair. In order for the enterprise to operate at a profit it required 15,000 engines a year. Moreover, among the 6,000 engines that were planned for them there were tractor engines, combine engines and truck engines as well as motors for construction machines. The largest batch was 2,000, and the smallest--200. With this kind of operation the plant could not avoid operating at a loss. The future still meant that the enterprise would be operating at a planned loss. "This meant that we had to spend our whole lives with our hands extended," the former director expressed it figuratively, "for is it really possible to solve such technical or social problems in development?" Therefore the managers of the enterprise, having consulted with science and the republic's Ministry of Agriculture which has jurisdiction over this plant, selected the variant of diversification which makes it possible to carry out the main assignments successfully and to grow with its own profit. In addition to repairing engines it created a production of diagnostic devices for their repair and operation.

Although the repair of individual kinds of technical equipment is not very profitable or is carried out at a loss at the plant even to this day, the production of diagnostic equipment keeps the enterprise as a whole in a good financial condition and makes it possible for it to develop dynamically, to increase technical support and to solve social problems. The plant was the first in the republic to increase the warranty period for the operation of motors after repair by 60 percent, and the diagnostic equipment made it possible for it to enter the international arena: the diagnostic devices are being purchased by 15 countries.

The level of solutions to technical problems has been so high that the All-Union Scientific Research Institute of Repair and Operation of the Machine and

Tractor Fleet of the USSR Ministry of Tractor and Agricultural Machine Building considered it necessary to open its own branch in Tartu and to make this the base plant for the problem of organizing the repair and diagnosis of the condition of engines.

"The prospects of the enterprise and cooperation with science--these are the main things which concern us as we come to the end of the 11th Five-Year Plan and the threshold of the 12th," says the director. "If we ourselves were to search for a solution to the problem, we would waste a lot of time and I am not sure that we would achieve the desired result: the plant is not large--it has 800 workers--and the management divisions are small. And it was necessary to go to many enterprises and institutions in order to select the best experience to emulate and it was also necessary to plow through a pile of literature."

Consultant: "A chronic problem is the cooperation between science and production, especially when the organizations belong to different departments. Each one is concerned with its own interests and its own prospects. How does one combine these interests? I had occasion to visit large production associations in Tallinn and see how they achieve mutual understanding between science and production, and to study the information on this subject as it pertains to the advanced organizations of the country and the leading foreign firms. My assistants visited various institutes and conducted a series of interviews in the Tartu branch of the State All-Union Scientific Research and Technological Institute of the Repair and Operation of the Machine and Tractor Fleet, at the plant and in the republic agroindustrial association, where the plant is now being included in order to clarify various points of view on the problem. Only after this was it possible to make a good judgment about the points of contradictions and about the ways of finding mutual understanding."

In the discussion we used the methods of the business games "Brainstorm" and "Round Table" which had already proved to be successful in solving problems at the plant.

Now the plant has a realistic idea of what it can expect from the developers. They, in turn, have a better idea of the production and technical capabilities of the enterprise. Future subjects have been defined. It was decided to create a general scientific and technical council of the plant and the branch, and in the future, at its quarterly meetings, to discuss large problems that concern both sides.

The production chief speaks: "One cannot say that everything went smoothly from the beginning. And even if we were to say such a thing, we would not be believed: production is production, and life throws in new difficulties every time. But a good deal has already been done. Our contacts with the developers have become closer and they are to blame for few interruptions in the work. Misunderstandings are now frequently clarified by a simple telephone call. We can count on mutual advice."

The question of the effectiveness of consulting is always fairly difficult. When I asked the director this question, after thinking a bit he said:

"I do not think that it is possible to evaluate the effectiveness in rubles. If things have moved from dead center, then this mean that the consultant has helped. If the enterprise believes the consultant and returns to him again and again, this in itself is the highest evaluation."

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## IMPORTANCE OF ENTERPRISE PECULIARITIES NOTED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 12, Dec 84 pp 110-116

[Article by Yu. E. Pyarnits, candidate of economic sciences, director of the PKB of Management Systems of the Estonian SSR Ministry of Light Industry (Tallinn): "Taking the Individuality of the Enterprise Into Account"]

[Text] Success in economic activity is provided by more than just the high level of the enterprise. It is no less important to be able to manage modern production intelligently, to improve the economic mechanism and to utilize effectively the capabilities of the management personnel.

In order to render assistance to the enterprises and to the staff of the Estonian Ministry of Light Industry in improving management, the planning and design bureau of management systems (PKB SU) was created. The PKB SU is the linking unit, a competent intermediary between fundamental science and production. Our main task is to search for ideas in science and to realize them (in conjunction with the enterprises) in practice. First of all we determine the problems which stand on the path to intensification of production, and right after that, on the basis of the utilization of the achievements of modern science and advanced domestic and foreign practice, we find ways of solving these problems.

In the work of organizations like ours it is important to avoid leaning to one side or another. Some organizations look only toward practice and do not recognize new scientific ideas. Without the enrichment of these developments they gradually reduce the value of their recommendations and become like adjuncts of the higher agencies. Such organizations, as a rule, do not do any good.

It is also possible to lean the other way--toward theorizing. Although development organizations (we shall call them this) should have their own scientific stockpile, sometimes they still leave fundamental science to the academic institutes.

The role of the PKB places particular requirements on our specialists. The ones who are competent in this organization are those who, on the one hand,

feel comfortable in the world of scientific ideas and, on the other hand, know and are able to take into account the demands of practical work.

Light industry enterprises in the Estonian SSR produce one-fourth of all the republic's industrial products. And in the light industry of the USSR, the proportion of Estonian SSR is fairly significant--it provides one-tenth of all the products of the branch, while in terms of population Estonia is the smallest republic.

Tens of thousands of people work at light industry enterprises in the Estonian SSR. The branch is multifaceted: on the one hand there are large textile enterprises that are known throughout the country like the Narva and Krengolm manufacturers, and the sewing associations imeni Klement and 8 Mart, and on the other hand there are a multitude of small footwear and knitting factories. While developing and disseminating progressive systems and methods of management, it is necessary to take into account the specific features of each production.

There is another danger which threatens the PKB and this is the danger of one-sidedness, becoming too involved with automated systems. The development of ASU's occupies a large position in our work. It produces up to 60 percent of the income. But we are also trying to develop other directions for our activity. Incidentally, last year, after a number of additional consultations, we decided that for such a large organization as the Estonian light industry it would not be expedient to create a unified data bank for the ASU. Many foreign firms have already rejected systems with centralized data banks. They give preference to local systems which are constructed for local needs of the user of management information. But so far the ministries want to have common data banks. We are continuing to work on branch ASU's and at the same time we are creating information systems which are intended for the demands of specific users--managers of various levels. An example is the automated work station (ARM) of the ministry's head energy engineer.

The monitor is hooked up to a minicomputer and is installed in the division of the head energy engineer of the ministry. The dialogic system makes it possible for workers of the division to control, analyze, predict and efficiently distribute the branch's energy resources. All of the work for creating and maintaining the data bank is done by the division workers themselves. We are convinced that with this kind of organization the quality of information will improve--the reliability and the promptness of access. Moreover, the roles of reports produced by computers have disappeared since the data are always at hand, so that all one has to do is turn on the terminal. And the computer stores only the actually necessary information--who wants to do worthless work and enter into the databank information which will not be used? And the main thing is that the overall "computer literacy" of the manager of the specific subdivision and his staff has increased. They, in turn, have placed greater requirements on the software and the models that are developed. The immediate user begins to have a real idea of the possibilities of modern computers--both their merits and their shortcomings.

It would seem that one should introduce personal computers into practice more extensively. Unfortunately, we have limited technical possibilities here today.

Automated work stations based on minicomputers, in which the user not only "looks over" the information, but also "creates" it himself and controls it, are a fairly good replacement for the personal computer.

Actually, our conception of automated working machines for management personnel amounts to an imitation of the work of the personal computer and even has some advantages: if necessary the user can fairly simply exchange local bases.

In addition to the development of ASU's, the following directions have been clearly defined in the bureau's activity:

prognostication and development of the economic strategy;

rendering of assistance in improving economic work;

development of management personnel in the branch and also improvement of the system of personnel management;

improvement of the organization of production and rendering of consultation service to enterprises in questions of management;

study of the sales market and market demand;

improvement of price setting.

Describing the first area I can say that it contains mainly functions relating to predicting the development of the branch and the system of models of economic activity which are traditional for such organizations. Improving methods of analyzing economic work, we are introducing the matrix method of analysis. It was invented by a professor of the Tallinn Polytechnic Institute, Yu. Mereste. Our specialists have augmented it with software and have entered it into electronic computers. The method has now become an instrument for analyzing all of the economic activity in the republic's light industry, and it is being borrowed by others.

The method makes it possible to reduce all indicators of the effectiveness of production and economic activity to one matrix and to represent them in their interconnections.

We also attach significance to improving the system of personnel management. It seems to me that our specialists have found many interesting decisions in this area. In the first place, our system for the development of personnel is oriented toward early disclosure of the individual's capabilities of management activity. The society loses a great deal from the fact that people who have capabilities as production organizers are discovered too late. Even in the first courses of our higher educational institutions in the republic we try to find students who are capable of management activity. They are drawn

into practice at enterprises of the ministry and into writing course projects on specific subjects having to do with production management, and then also diploma projects. As a result, these young specialists when they arrive at work already have a certain amount of training in management activity in the system of our branch.

In the second place, our system for the development of personnel is continuous. It consists of two blocks of activity: training and work with a manager. In our opinion, training provides for only 20 percent of the development of the manager, and 80 percent of his development takes place in his daily activity.

Work with people who have exhibited capabilities of management assumes various forms. In particular, we have probation work or, rather, work in management positions. For example, in the psychology department of Tartu University we attracted the attention of one student who was inclined toward management activity. After he completed training we hired him in our PKB. He worked for us for 4 months and then was sent as a probationer to be deputy director of the personnel branch of the Kommunar Leather Footwear Association, even though he was still on our staff. It is important to note that he worked there just like everyone else and proved himself to be a capable manager. After that he worked as a probationer as the deputy chief of the personnel division of the ministry and also proved himself. The ministry, with complete confidence in this capabilities, approved him as deputy general director for personnel of the Kommunar Association.

Our ideology for the development of management personnel is as follows: from study to training. We have developed a complex of sociopsychological training of managers which enables us to move from educating individual managers to developing the management teams. The high qualifications of the first manager will not guarantee a high level of management if he does not have a team of competent assistants.

As an example let us take a football team. The football players, of course, have individual training, but the predominant teams are the ones which are defined, in the final analysis, by the potential of the sports collective. "Management stars" cannot produce good results either unless they have team. We have developed methods of team training which should contribute to the formation of management teams. Team training is applied both at the level of the enterprise and at the level of the ministry, the latter being called the school of directors. All directors and responsible officials in the ministry participate in it.

Team training contributes to improving the mutual understanding of the managers, to the dissemination of new ideas and to the formation of the overall strategy of the organization. It is especially effective when introducing organization changes.

It is more crucial to improve cooperation than is usually thought. As research conducted by PKB specialists has shown, significant reserves for increasing production effectiveness lie hidden in potential cooperation. The larger the organization, the greater the reserves for increasing the

productivity of labor which lie in improving the interactions among the subdivisions, groups and individual workers.

I shall give a typical example. The director of one of the associations in our branch was not satisfied with the operational management of production. He invited our specialists, who conducted an investigation of the condition of the operational management. After that, team training was organized. The studies began with a lecture from a consultant who elucidated the theoretical aspects of the problem and familiarized the participants with the solution to this problem in the leading organizations. The results of the investigation were utilized subsequently. Then in groups of five-six they looked for a decision. After the discussion the director asked each group to write a draft of an order for improving operational management of the association. When the groups submitted their drafts it became clear that they differed significantly from one another. There were almost no general proposals, and this after an entire day of training and joint discussion of the problem!

The different understandings of the problems and production situations plus the psychological incompatibility of certain workers and their inability to communicate with their colleagues and their subordinates lead to a deterioration of cooperation. The problems become more difficult to solve and the effectiveness of joint work decreases. It is impossible to improve cooperation with orders. Others methods are needed. Team training is one of these.

The next direction for our activity is assisting enterprise managers in solving concrete problems of management and disseminating advanced management methods. These functions are carried out by a number of divisions. They also engage in improvement of brigade organization of labor at enterprises of the branch and systems for control of product quality.

In order to diagnose the condition of management at enterprises and render assistance in improving it, at the end of 1979 a management consulting bureau was created as part of the division for improving the organization of production. This subdivision should be to some degree analogous to foreign autonomously financed consulting firms.

We regard consulting as a basic method of our work at the enterprises. Consultants have played a large role in introducing brigade organization of labor. First it was necessary to train the corresponding workers: foremen, chiefs of labor division and shop chiefs. Without reliable training it is impossible to carry out organizational innovations effectively without the proper training. In order to do this, 2- and 3-day special-purpose courses have been organized. The consultants have studied the situation that has taken form in the shops and have developed optimal output norms, criteria for calculating the coefficient of labor participation and wages for the basic and auxiliary operations. All the work has been conducted in conjunction with enterprise workers. When the brigades at the enterprise began to work smoothly, the consultants moved on to another facility.

Our PKB has specialists in other types of consulting. The first type is expert consultants. They handle relatively particular, but typical problems,

for example, the arrangement of business correspondents and document circulation, improvement of the system of wages and norm-setting for labor, and so forth. The second type of consultant includes specialists in comprehensive problems of management, and they engage in the development of the enterprise's strategy and improvement of the organizational structure.

Recently we began to develop another area in the activity of the PKB: study of the market supply and demand, the organization of advertising of goods, and exhibits of our products. The reduced demand for a whole number of goods which are being produced by the branch forced us to turn to this.

In conclusion I should like to discuss one other aspect of our work which is, incidentally, extremely important and, moreover, extremely delicate.

Purely consulting activity is always oriented toward a specific enterprise and its individual peculiarities. The expert and the production specialists must have the most confident relations. As a patient who goes to a doctor and expects assistance from him must tell him everything about his condition, hiding nothing, so the production workers must speak frankly with the consultants about their problems, difficulties and reserves. But the PKB is under the jurisdiction of the branch, which centrally finances a whole number of our work projects and gives us assignments for investigating enterprises. It is very difficult to combine these contradictory actions. In our reports for the ministry we cannot use the information that we have obtained in confidential conversations at enterprises where we are doing consulting work. And we are sometimes reproached for the fact that we do not offer various kinds of information.

Therefore it would be expedient for the consulting organizations not to be bound by departmental ties. They can develop on the basis of subdivisions and management consulting bureaus which are similar to our PKB but in terms of status they should be independent and outside the branches.

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## HIGH-QUALITY WORK PRODUCES AUTHORITY

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 12, Dec 84 pp 117-122

[Interview with M. Lagerquist, vice president of the Habberstadt international consulting firm (Stockholm): "Authority Is Created by the Quality of Recommendations"]

[Text] [Question] Dr Lagerquist, please introduce your firm and the sphere of its activity to our EKO readers.

[Answer] Habberstadt is an international consulting firm. It is among the largest management consulting organizations in Europe. We have six divisions in various countries: in Sweden (the largest), Norway, Belgium, Denmark, Great Britain and the United States. With a staff of about 100 qualified consultants, the firm fills 500-800 orders a year in 15-20 countries. And the geography of our activity has expanded recently. We now have clients among the developing countries of Africa and Asia. Communications with a large group of industrial companies and firms is useful. The broader the field of activity the more ideas we have and the richer our experience. Among our clients are large, medium-sized and small industrial enterprises. They can be both private and governmental. Even organizations of the nonindustrial sphere turn to us.

[Question] What causes clients to turn to a consulting firm for help? Which problems do they bring to you most frequently?

[Answer] Most frequently we are faced with the following problems: working out a strategy for development, correct selection of a product for production --how to create a demand and success with the consumers, to obtain government orders and to increase profit. All this external effectiveness which is the main condition for the success of an industrial company. There is no doubt that internal effectiveness is also important--developing efficient methods of obtaining the products and arranging work with people correctly. But if they produce unnecessary things for which there is no demand, it no longer matters how effectively they are produced: the company is still doomed to failure and to a loss of profit.

Many people consult on problems of the market. Every industrial company wants first of all to find its place in the market. The firms ask us to help in developing a strategy for winning and retaining consumers, for determining the size of the market, for predicting the future and for creating sales programs. Current market problems are also important for them: the distribution of the program for monthly sales of goods, how precisely the program for sales follows the program for production, and the optimal combination of supplies of commodities in production and in the warehouses.

Of the problems involved in internal effectiveness of production, small enterprises most frequently bring to us the problem of increasing labor productivity. Recently there have also been more and more orders for consulting on the utilization of computer equipment. What is the most important thing for the manager? To adopt a correct decision. To do this he needs complete and reliable information. In the middle of the 1970's the future work station of the manager was pictured as follows: a terminal which is connected to the large computer by communications devices, a printer and a tape recorder. But I have never seen any of the managers using this kind of equipment. The organizations have made large investments in automating management, but they have not received the return they sought. Bulky automated systems and large centralized data banks have been created, but frequently they have not taken into account the most important aspects of the activity of the manager. He does not have to know all of the daily results of production. They are needed by the person who is closest to the production process--the foreman or the shop chief. And the manager can require this information only once a week.

Practice has shown that it is best to have decentralized data banks--each one for a particular level of management and for a specific user of the information. Terminals with small data banks are appearing. Thus people are coming to us for assistance in creating management information systems which are intended for various levels of management and for specific managers. They conclude agreements with us for consulting on personnel work as well.

[Question] What kind of assistance can they count on in this case?

[Answer] They ask us to evaluate the prospects of personnel and to organize their training. Communication with consultants enriches the specialists with ideas. And, of course, our advice to replace less capable specialists is also of assistance in placing personnel.

[Question] How are relations arranged with clients, what is the usual length of the agreement, and how many consultants participate in carrying out one assignment?

[Answer] Recently the economic climate has become much more strained and rigid. The life of economic and management decisions is now shorter than it was before. Therefore when investing money in production the company wants to obtain a result in a shorter period of time. It is necessary to actively introduce changes and to vigilantly watch over the market conditions. This causes industrial workers to search out qualified advisers and to turn to outside consultants.

One agreement with a client is concluded for an average of 1.5-2 months. If the consulting firm has managed to win the confidence of the client, the contract is extended. There are also contracts which are concluded for several years.

We value very much contracts that are renewed after our first job: they are evidence of success and contribute to increasing the firm's prestige. Authority is created by the quality of our work. If the client is dissatisfied the firm will continue to work with him until he is satisfied, even if it is necessary to finance the completion of the work out of our own pocket.

Retaining clients and winning a new field of activity are important conditions for the survival of a consulting firm. This problem is playing an ever-increasing role in Western consulting management because of the more tense business climate and the greater international competition.

Our firm concludes small agreements. Mainly there are one-three people working on each of them, and less frequently--four-five. But it is indispensable to have individual agreements for one consultant, which force him to be in good working form all the time. On an average each consultant performs \$150,000 worth of work each year.

[Question] And so there is the problem of the survival of management consulting firms. What qualities should the consulting firm have in order to endure and win?

[Answer] Consulting firms must be strong first of all in the area in which they are consulting. Consequently they must have very qualified specialists who have rich experience in various areas of management.

Under these conditions, it seems to us, the consultants must have such qualities as the ability to suggest good ideas themselves, to be receptive to new ideas and to introduce what has been earmarked. If the consultant is oriented in all areas toward the average level, as practice has shown, this is not bad. It is worse when he has certain qualities to a high degree and is completely without others. Let us assume that an expert generates excellent ideas but is not receptive to others' suggestions or cannot bring the work to the point of introduction. In such a case there will be no result.

[Question] There exists the opinion that it is difficult to evaluate the consultant's work in money.

[Answer] Yes, it is obviously difficult to calculate the return precisely. But every manager of an industrial company can see and evaluate the advantage from consulting. For him the result is present in two forms: before the consulting there was one level of results and profit, and now that the suggestions have been carried out--these levels are higher. Or the firm thinks that the proposed strategy will be useful to it.

[Question] Who are these consulting specialists? What kind of training and educational requirements do they have?

[Answer] Before coming to us a person must have 10-15 years of work in management. And it is quite unimportant what kind of basic education he has--technical, legal or economic. The average age of our experts is 35-45 years.

[Question] There are not very many people who have 15 years of service in management work by the time they are 35.

[Answer] If a person has displayed abilities for management work in the university, immediately after graduation he ends up in a management job. I myself began to work in management positions at age 22.

[Question] Toward whom is your consulting firm oriented--narrow specialists in a particular kind of management activity or universal managers?

[Answer] The activity of a consultant in our firm looks like this: he comes to us as a specialist in narrow problems; his experience, horizons and education gradually grow. The consultant becomes most valuable to us when after several years of work with us he can give an answer to the majority of questions that interest the client. It frequently happens that when calling in an expert a client says: "Something is wrong with our economics." And when the expert has become familiar with the affairs in the company he is convinced that something is wrong in management and this is where the help is needed.

[Question] With this complexity of the work and these requirements on the level of qualifications how are the consultants paid?

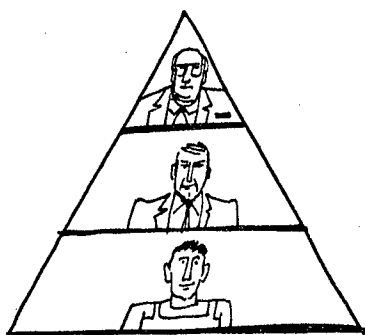
[Answer] Yes, the question of wages is a very important issue since, on the one hand, it must evaluate the result of the work and, on the other, it determines the level of prestige of this position. In order for a management specialist, after 15 years of management work, to have a desire to do consulting work, it must be paid not only no less, but even somewhat more than the manager would get in the position which he occupied before transferring to the consulting firm. Therefore we pay a person who first comes to us 10-25 percent more than he received in his previous job. Subsequently everything depends on the results. His wages can increase by 35-45 percent as compared to his salary in an industrial company.

When an expert consults at a high level of management of an industrial firm he bears a large amount of responsibility: if he is mistaken he lets the firm down. There are managers who say: "I will not listen to the advice of anyone who costs less than I do (receives less)."

[Question] What is your idea of future consulting activity?

[Answer] On the whole I have optimistic expectations. And in order to convince you of these I shall turn to the pencil. In the 1960's and 1970's orders from industrial companies for consulting were distributed as follows:

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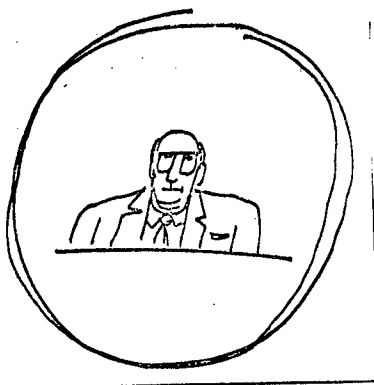


Top level management

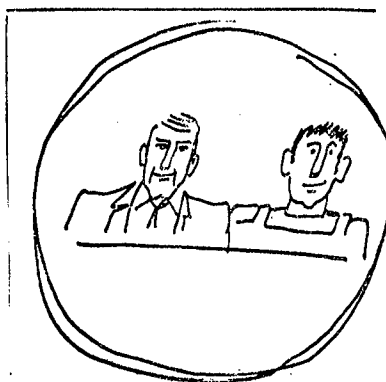
Middle level management personnel

Specialists

But now it can be represented this way:



←----- Top level management



Middle level management  
personnel and specialists ----->

During past decades we have consulted mainly with middle management personnel and specialists. In the 1980's there has been a stronger tendency for higher management of companies and firms to turn to consulting assistance. Because of this there has been more prestige for consulting activity, but the responsibility has also increased. The problems presented to us have become more difficult since the upper management level asks consultants more questions that are related to obtaining an external effect and determining the sphere of investments. Previously it was easy to determine the sphere of investments because the economy was rising. After the middle of the 1970's it was more and difficult to do this. One cannot make a mistake. And one cannot find an answer in the books either. It is necessary to evaluate the situation

of the industrial company correctly, to know its personnel and capital, and to study the market conditions. And then one must give correct advice. This is why the management of firms come to consultants.  
[EKO] Thank you very much for your useful conversation.

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## INCENTIVES FOR INVENTIONS DISCUSSED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 12, Dec 84 pp 123-134

[Article by A. S. Kolesnikov and V. V. Starovit, USSR State Committee for Inventions and Discoveries (Moscow): "Stimulation of Important Inventions"]

[Text] Let us begin our discussion with the question of the position occupied by the State Committee for Inventions and Discoveries and its main agency which provides expert evaluation of inventions in the system of control of scientific and technical progress. A centralized agency for "management of invention work" was created during the first years of Soviet power, was abolished in 1936, and was restored in 1956. Naturally, scientific and technical progress and invention, a constituent part of it, functioned even during the time when the committee on inventions did not exist. This means that the committee is not the only agency that is responsible for scientific and technical progress in the national economy.

The main agency of the State Committee for Inventions and Discoveries which provides expert evaluation of inventions is called the All-Union Scientific Research Institute of State Patent Expertise, and the expertise which it provides in the system of the State Committee for Inventions and Discoveries is called state scientific and technical expertise--and this lack of terminological correspondence is symptomatic. Nowhere in the numerous and voluminous normative acts and methodological instructions on invention expertise is there a sufficiently simple and clear answer to the question: What does the VNIIGPE do? Is patent expertise the possibility of issuing a patent for an original technical idea with a clear-cut registration of its essence and the rights to it? Or does expertise establish the possibility and expedience of utilizing the invention in the national economy and envision the issuance of certain responsible recommendations and the solution to the concrete question of the technical policy?

The engineer Diesel, the inventor of the well-known engine, obtained a patent without having created a single engine in metal. And the first diesel engines, which were made after the patent was received, could operate for only a very short period of time and then they were idling. Carlson, the inventor of the famous apparatus, after he received a patent was for a long time unable to find funds to arrange for the production of this apparatus since everyone

doubted that what he intended to do would be profitable. Indeed it was a very long time before it produced a profit and income was produced only after the components and the parts of the apparatus had been developed and protected by an additional 150 or so patents. Nobody had any doubts about the correctness of issuing these patents since the purpose of the patent department and the patent board of experts was to register inventions. In these cases one could refer to if not a rule then a custom: many large inventions which appeared brought about not a storm of rapture, but healthy skepticism on the part of specialists since it was difficult to distinguish them from the stillborn projects which were still quite eligible for patents.

Critics of the activity of the State Committee for Inventions and Discoveries point out as an essential shortcoming of its work the fact that only one out of three inventions that are registered are actually used in the national economy. But in the USSR the proportion of inventions that are used is even somewhat higher than in other industrially developed countries, and one cannot assert that it is either good or bad without a qualitative analysis of the inventions that are utilized. The completeness of the utilization of the supply of inventions that are registered is conditioned by the peculiarities of the development of technical equipment in the country and also the role that is played by the patent departments.

In world patent practice applications are considered in two stages: first they undergo a preliminary expert evaluation which establishes whether or not the documents that are presented can be regarded as applications for inventions, and then comes the expert evaluation itself which establishes whether or not this is an invention which can be patented.

The provisions we have in effect concerning discoveries, inventions and efficiency proposals envision that when application is made for an author's certificate rejection is allowed only if the failure to observe the established requirements for filling out the application for the invention impede its consideration. Naturally, the absence of an invention itself does not impede the consideration of the application since the establishment of the existence of an invention and its properties is the goal of the second stage, the so-called state scientific and technical expert evaluation. But even in the first stage--the preliminary expert evaluation--we encounter regular refusals to consider applications for invention because they do not have any advantages over the base objects. The base object is the best technical means that is known in the area to which the invention belongs. And it is desirable to express the advantages in monetary form. Thus a strong desire to establish the usefulness of an invention and to weed out the less useful inventions have led to a situation in which their regularly appears a threat of losing priority for the most valuable and promising inventions. For this reason similar inventions which were created later by foreign inventors receive legal protection along with domestic inventions. This can take place if, in spite of the Provisions established by the USSR Council of Ministers, the workers in the division for preliminary expert evaluation of the VNIIGPE literally follow the standard form of the rejection, and the individuals who submitted applications are too meticulous in advertising their idea.

One must say that the process of considering applications for inventions is regulated by fairly complicated rules which do not substantiate the decisions concerning applications although this is accepted both in the court and in world patent practice. There is a comparison of newly patented inventions and those that are known in world patent practice, but these comparisons are of a qualitative nature, they are extremely limited in provision and they are made only in order to clearly understand the essence and the limits of the patented technical idea.

And so the inventor is refused authorship and the invention is refused recognition because of a lack of usefulness. But frequently in and of itself it is impossible to establish the usefulness of an invention for the national economy because of several reasons. It is impossible to arrange for industrial production in keeping with the description of the invention for the patent because of the lack of "know-how"--a small amount of information, but it is so important that to sell a license for an invention without "know-how" is more the exception than the rule. The technical and economic effectiveness of a specific invention depends not only on its essence, but also on the level of the "know-how" that has been developed. Almost any invention can be improved and, because of the lack of criteria for perspective usefulness, any evaluation of the usefulness is limited to this precision and is fair only within a particular time segment. Finally, the relationship between the usefulness of concrete inventions, for example, paints, can change not because of their essence, but because of inventions in related areas, in this case in means of producing raw materials for these paints, which can make one paint many times less expensive.

Few people can remain indifferent to the results of the consideration of applications that come into the VNIIGPE. From one-half to two-thirds of the applications that come in each year do not contain inventions. If one is inclined to be dramatic one can come to the conclusion that a considerable part of the collectives of developers of new technical equipment are not oriented to the flow of scientific and technical information and cannot evaluate the usefulness of their developments. One can also draw another conclusion: an important condition for the normal functioning of the patent system is the reduction, but not the elimination of the confused wave of applications that do not contain inventions.

The words "confused wave of applications" were used during the course of a discussion which took place in the State Committee for Inventions and Discoveries regarding the reorganization of the Soviet patent system, and to a certain degree they reflect the quality of about 200,000 applications that come in each year mainly from organizations and enterprises. The fact is that not only such large inventions as penicillin and nylon, but also many other inventions should be used in objects of new technical equipment in all the technically leading countries. When developing objects of technical equipment that are similar to foreign ones there appear many small and extremely small improvements and changes which adapt the technology to the existing raw material and equipment. These improvements comprise the basis of the "confused flow of applications" and their constant pressure on the VNIIGPE has led to a lowering of the level of the entire mass of inventions, which is generally recognized at the present time.

The simplest and strongest means would be to introduce tariffs, if only for the consideration of applications for minor improvements and rejected applications, and also for submitting innumerable objections regarding refusals to recognize efficiency suggestions as inventions.

But two other measures combined would do more to hold back the "wave" and also to protect the rights of the inventors. Only people who have taken the corresponding examinations in technical equipment and law should be allowed to fill out applications and defend the rights of the inventors. In world patent practice they are called patent attorneys. Patent attorneys exist in certain socialist countries, and they have existed in the USSR as well. The latest provisions concerning patent attorneys were adopted in 1928 and were in effect until the elimination of the Committee for Invention Affairs in 1936. There are many inventions which foreign firms will not patent either in the USSR or in their own countries, although our patent subdivisions will patent them. In order for our patent attorneys to be able to withstand the local pressure in such a situation, the patent subdivisions of the scientific research institutes and design bureaus, following the example of legal consultants and head bookkeepers, should be transferred to dual jurisdiction, that is, the managers of patent subdivisions and their staffs should not be changed without the permission of the State Committee for Inventions and Discoveries or the Board of Patent Attorneys. All activity of patent subdivisions will take on the necessary direction. It is also possible to increase the proportion of Soviet inventions that are patented abroad.

On the surface it turns out that the VNIIGPE expert, the engineer and the worker in the broad area of technical equipment allots a day or two for the consideration of applications and the completion of correspondence, and thus during a year he finds and establishes the facts concerning hundreds of inventions, but the developers cannot figure out the degree of innovation and usefulness of the small number of their developments. The small number of inventions that have been utilized in production have contributed to the origination of the legend concerning the uninformed developer of new technical equipment, and also the legend that the creation and introduction of inventions is something that is alien to the staff, which in reality solves problems related to the technical policy. Hence there appears the desire to recommend for immediate introduction inventions which, in the opinion of the State Committee for Inventions and Discoveries, do not deserve this.

But the introduction of large inventions involves risk and increased economic difficulties during the first stage of introduction. And the State Committee for Inventions and Discoveries cannot finance the introduction, for which developments are necessary, and instead of responsibility for their recommendations there appears a plan for the introduction of the invention through the application of sanctions for the failure to carry out these recommendations. At the same time there are difficulties in issuing such recommendations since they do not always manage to correctly determine the ministry which can be interested in the specific invention, and it is even more difficult to solve the problem of providing raw materials and equipment. In science-intensive branches it is possible to ignore the influence of "outside" invention on the technical level of the main technological

processes--in these all developments, including those at the level of inventions, are created in the branch scientific research institutes and design bureaus, plant laboratories or academic scientific research institutes, which have the usual coordination plans, and therefore recommendations are superfluous. It is difficult to imagine that the scientific and technical administrations of the ministries, the branch scientific research institutes and the entire engineering body of the branch are not able to do without episodic recommendations from outside.

The consideration of applications for inventions is concluded with the issuance of an author's certificate, which means that the exclusive right (the right to prohibit utilization) belongs to the state, and the author of the invention has the right to consider himself the author and to receive a remuneration in the event that it is utilized. All socialist organizations have the right to utilize this invention unimpeded and without remuneration.

The incentives for the organizations that create and introduce an invention which is protected by an author's certificate are mainly moral ones. To be sure, workers of these organizations can receive a small bonus for contributing to the introduction, but the group of people who are in line for this bonus is diffuse and the legal guarantees of receiving it are not great. When there are competing inventions, the "go-getter" qualities of the authors of the invention can have an effect on the technical policy of the enterprise. If a large invention has been created outside the branch scientific research institute and the corresponding plans for scientific research work, and outside the organization that is capable of developing technical documentation (sometimes very complicated documentation), then the organization that has taken on the development of "know-how" must be ready for a situation in which after overcoming the risk and the difficulties, the inventor will come back to it and claim that the invention is what provides the economic effect from the entire development. As we can see, in certain cases the lack of reimbursement for the utilization of the invention and the very fact of the issuance of the author's certificate are not an incentive, but an impediment to the introduction of large inventions.

Our friends in the socialist countries have recognized these problems and introduced special norms which stimulate the introduction of inventions. In Czechoslovakia and Bulgaria an enterprise which has introduced an invention can be reimbursed for expenditures on the creation and introduction of the invention at the expense of other enterprises that use the invention. If we were to introduce such rules the plant inventor who involves his enterprise with the risky innovation with its increased expenditures becomes a more desirable figure since part or all of the expenditures for the introduction can be placed on the outsider who takes advantage of the experience. But, obviously, the introduction of such a measure can solve only an insignificant part of our problems. This measure is not suitable for our organizational structure since most of the inventions, including the most important ones, are created in the branch scientific research institutes and such measures are not included in the existing mechanism for cost-accounting relations.

In Hungary and Poland an invention is assigned to a specific organization through the issuance of a patent which establishes the organization's right to

this invention, and other inventions of the socialist sector can use the invention on a reimbursement basis, and the amount of the payments depends on the economic effectiveness of the utilization of the invention. In order for rights of this kind not to produce negative results, Hungary has introduced into the patent law an article which makes it incumbent on the holder of the patent to utilize the patented invention extensively in the interests of the national economy. In Poland the organization that is called the patent holder cannot prohibit other organizations of the socialist sector from utilizing the invention, but can only claim a proportion of the economic effect from its utilization. This peculiarity distinguishes the right of the patent holder of a socialist organization from the right of a patent holder of a classical patent monopoly, which prohibits utilization of the invention without the agreement of the patent holder. Similar to the way in which the socialist enterprise does not become the owner of the property assigned to it but has certain rights over it called the right of operational management, the socialist patent-holding organization does not become the usual patent holder, but acquires the right to operational management of the invention, the specific nature of which is conditioned by the nonmaterial nature of the object of this kind of right.

In the USSR as early as the 1960s it was suggested that we assign the right to an invention to a specific organization and refrain from utilizing the invention within the country without reimbursement. Critics of this proposal asserted that the introduction of a monopoly on the invention (as we can see, this is not the classical patent monopoly, but the right to operational control) would have a negative effect on the rates of technical progress, and the additional payments would be an impediment to its introduction; moreover, the utilization of several inventions from various organizations in one technical object would create significant difficulties in correct delimitation of the effects of the various inventions.

Problems of fair delimitation of the effects from inventions utilized in one technical object are resolved in the practice of world trade in licenses and in the economic practice in socialist countries. Under the conditions of the capitalist method of production there are two ways of obtaining the advantages from the utilization of monopolized inventions.

If an invention is a method of producing a traditional product, for instance sulfuric acid, the owner of the monopoly has increased profit as a result of producing each unit of output at a cost lower than that of his competitors. If the invention is a new product, the price for it is determined by the demand--thus the retail price for packing tetracycline during the period the patent was in effect was 30 times higher than the cost of manufacturing it and considerably higher than it would have been under conditions of free competition. In both cases the advantages appear as a result of reducing the scale of the utilization of the invention. This negative consequence cannot arise with planned management of the economy and the lack of prohibition on the utilization of such an invention.

The introduction of such a patent does not solve all problems of price setting for the results of developments. Developments of scientific research institutes can be based not on domestic inventions, but on foreign ones, and

in this case similar development ("know-how") can be acquired abroad under a free licensing agreement, and other principles are needed for price setting. At the same time such a patent will influence the cost-accounting relations among the branches. Thus an invention in one of the machine-building branches will be brought into cost-accounting relations in keeping with its real value, which is now not taken into account because of the policy of utilizing without payment inventions that are protected by an author's certificate.

The assimilation of inventions involves risk and difficulties; under the conditions of the capitalist method of production, inattention to a technical innovation or a mistake in the technical policy will threaten the very existence of the firm, but there are also incentives to take the risk. Of two inventions which are of equal value the firm prefers to assimilate the patented one, although this involves expenditures on acquiring the patent, since subsequently the risk and expenditures are recouped by the lack of competition. Such risk and difficulties of introduction are objective and therefore it seems justified to introduce advantages for the socialist enterprise which is a pioneer in the introduction of the invention. This advantage could be a reduction of payments for the utilization of the invention as compared to enterprises which assimilate the same invention later.

In socialist countries organizations that have sold licenses for their inventions abroad receive all or a large part of the sum they have coming in foreign currency. The sale of licenses for an invention patented abroad means that abroad there are either no equal technical means or such technical means have been monopolized by a patent-holding firm. In the USSR an organization which has sold a license can receive 30 percent of the foreign currency paid for it, but it must make up the corresponding sum in roubles. The authors of an invention receive up to 3 percent of the sum, but within the limits of the existing maximum for remuneration for an invention. The sale of a license is not very related to the incentive funds of the scientific research institute or to the incentives for new technical equipment, although the entire collective of the scientific research institute participates in the development of "know-how" which is necessary for the sale of the license as well as in the creation of the invention. The system of incentives should take into account the fact that in individual cases the export of products is more advantageous for the state than is the sale of licenses, and in this case the income of foreign currency will be provided for as a result of exporting products at monopolistic prices that are maintained by patents for Soviet inventions.

The decree of the CPSU Central Committee and the USSR Council of Ministers of 12 July 1979, "On Improving Planning and Strengthening the Influence of the Economic Mechanism on Increased Effectiveness of Production and Improved Quality of Work," envisions a 1.5-fold increase in increments to wholesale prices for highly effective new products, and also for products which have been awarded the State Emblem of Quality when the production of these products is based on developments that are recognized as discoveries and inventions under the established policy. Thus a new principle will be introduced for providing incentives for the introduction of inventions which is different

from the principles that have been accepted in the practice of other socialist countries.

Product quality can be improved in various ways--by obtaining better-quality raw material from the suppliers, by utilizing better equipment, by optimizing the parameters of the technical object and by utilizing inventions. One or several inventions can be used in a single technical object, and the inventions can be not only devices, but also substances, methods, cultures of microorganisms or the application of these objects for new purposes.

There are no clear-cut and generally accepted rules for determining the effect of an invention on the quality of a product, and the evaluation of the existence of an invention is usually conducted with a particular remuneration and is done, as many have noted, fairly superficially. The quality of a diesel as an engine depends on a correct selection of materials for the parts and components, the processing of these, the optimal sizes and forms, and improvement of auxiliary technical decisions. Any evaluations of the influence of an invention on product quality will be subjective and have limited accuracy, and this accuracy will be the lower, the greater the invention.

Another approach seems more promising. There are inventions which open up new areas in technical equipment and remain unsurpassed for a long period of time, as a result of which all technically advanced countries are forced to use them simultaneously and on a large scale. The sooner our economic mechanism establishes such inventions and stimulates their introduction, the more effective will our technical policy be and, correspondingly, also the results of economic activity. In addition to the aforementioned inventions, in each branch there is a small quantity of inventions which make it possible to produce products on the level of the best models. It seems justified to us to extend increments to these inventions as well.

In the hands of the State Committee for Inventions and Discoveries the granting of increments or the refusal to grant them can be an instrument for the introduction of large domestic inventions. Now the author of a large invention and the author of a small improvement in obsolete production can receive the same amount of remuneration, which gives technical creativity and the entire technical policy an undesirable orientation and does not provide for the proper unity of material and moral stimuli.

With this classification of inventions, the system of incentives for inventions can be joined to new technical equipment that is based on large domestic inventions: technical documentation for the new technical equipment can be the object of a licensing agreement.

In practice so far the stimulation of the introduction of principal innovations has been reduced to the fact that the State Committee for Prices and the State Committee for Inventions and Discoveries have established rules, according to which the increment to the wholesale price is applied for those kinds of products in which the invention constitutes the basis or a main element, which is established by a conclusion which is coordinated between the main producer and the consumer.

It seems that the effects from the increment should be extended to certain methods that contribute to increasing product quality and protecting the environment. The agency that recommends the introduction of inventions cannot refrain from direct participation in providing incentives for those who have achieved the greatest results in the utilization of inventions or direct solutions to problems concerning who should be granted the aforementioned increment and the maximum remuneration for the utilization of the invention.

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## FUNCTIONAL COST ANALYSIS DISCUSSED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 12, Dec 84 pp 135-141

[Article by S. A. Kheyman, doctor of economic sciences, Institute of Economics of the USSR Academy of Sciences (Moscow): "An Important Source of Increased Effectiveness"]

[Text] On the initiative of enterprises and associations of the Ministry of the Electrical Equipment Industry, the method of so-called functional cost analysis (FSA) has appeared and become more and more widespread in Soviet industry. It is difficult to overestimate either the theoretical or practical significance of this. The FSA method is inseparably related to the processes of the modern scientific and technical revolution, it is necessary for the effective realization of the latter and, additionally, it is a powerful stimulus for innovations in science and technology.

The practice of using the FSA in the electrical equipment industry has already been discussed on the pages of EKO (No 6, 1981). In this selection of articles we are presenting the experience of enterprises of the Ministry of the Electrical Equipment Industry, Ministry of Machine Building for Light and the Food Industry and the Ministry of the Automotive Industry, whose interpretation makes it possible to draw generalizations which are crucial for domestic machine building.

In its most general form FSA consists in the following. A given technical system and expenditures on its creation and functioning are broken down into constituent subsystems of all ranks; the functional content is singled out from each of them; expenditures--value, material and labor--related to these processes are analyzed; the expediency of all functions and methods of carrying them out is evaluated; and, finally, an optimal variant of the functions and the structure of the system and optimal methods of carrying them out are developed and, correspondingly, optimal expenditures are determined for the production of this system.

Here special attention should be devoted to those units for the production of technical equipment which absorb the greatest volume of resources. In an article devoted to the experience of plants for automotive and tractor electrical equipment this approach was clearly formulated: "During the course

of a preliminary economic analysis we singled out the constituent parts in the design which involved increased expenditures. These parts are usually small, functionally isolated assembly units. And they are the immediate object of the FSA."

It is necessary to clarify the subject and object of FSA. The subjects are the planners and the manufacturers of a given technical means. The object is the production and functioning of this means: planning, development of design and technology of manufacture, preparation and organization of production. Since the functioning of technical equipment is also the object of FSA, an important duty of the planners and producers is differential analysis of it. The authors of the article on the experience of the plants of automotive and tractor electrical equipment emphasize that "along with analysis of production expenditures, one cannot forget about operational expenditures." This is especially important if one takes into account the fact that in automotive equipment, as in many other kinds of equipment, during the period of the life cycle the operational and repair expenditures exceed production expenditures many times over. This aspect of FSA is of principle significance. It stimulates and creates effective foundations for orienting the creators of technical equipment toward the consumer for a comprehensive accounting for and optimal satisfaction of public needs. Thus the objects of the FSA are: (a) the function which should be carried out during the course of a given technological process (or the function which should be carried out by the given means or products of labor); (b) the totality of technical means which are intended to provide for more effective implementation.

A most important merit of FSA consists in its penetration into all subsystems that comprise the analyzed object. All of them are regarded in their functional aspect: how to make sure that they perform their functions and subfunctions best with minimum expenditures supporting them or, as the general director of the Vatra Production Association, R. Yu. Yaremchuk, successfully expressed it, "in all stages of the life cycle of the item."

Of special significance is the functional approach itself to the planning, design and development of technology into the very process of the production of various technical devices (and, with certain modifications, also various objects of consumption).

The functional approach in the well-known sense is indifferent to the final purpose of the given system and to the substantial form and principal nature of the system or subsystem that is produced. It gives the planners, designers and technologists the freedom to select technological, technical and structural decisions. They have all been given the goal of finding the best means and methods of carrying out a given function. Thus the functional approach opens up the possibility of principally new, truly innovative decisions. A clear example of such a decision is the changeover from cumbersome electronic tubes to semiconductor solid-state instruments on printed or integral circuits and to microprocessors. As a result, it was possible to reduce the production cost of microelectronic equipment and the prices for it by hundreds and thousands of times over, with an equally high increase in the effectiveness of its functioning.

The functional approach is especially productive with automation. Each unit of an automated system and a production system as a whole should be oriented toward optimal performance of one function or another. In order for automation to be productive and economically effective it is not necessary to automate all elements of the existing production process, processing and assembly of existing elements of the manufactured items. This path is the least effective. First of all, one should gain a new idea both of the final product and of the entire production process. But this new idea can be productive only from the standpoint of a functional approach. This was written about convincingly as early as the 1950's by the eminent theoretician of automation in the United States, John Dybold: "It is necessary to achieve a clear understanding of the final functions of a given item or process and a critical clarification of whether or not the same or even more successful performance of these functions can be achieved with the introduction of small or fundamental changes which are necessary for changing over to automated production of the given item."<sup>1</sup>

The significance of the functional approach increases in connection with the evolution which is taking place in the area of technology. The great achievements of the scientific and technical revolution are turning out to be increasingly frequently related to the creation of principally new technologies, penetrate through them into production and radically change the system of implements of labor. Thus new welding methods led to the elimination of large facing and vertical lathes; methods of continuous smelting of steel made the huge blooming mills unnecessary, and so forth. All radical improvements in technology are based on the functional approach: How does one most expediently perform the given function, of what subfunctions does it consist, and how does one create technical equipment for performing this function? Progress in the technology of the utilization of a particular function is one of the main paths of general progress of technologies.

The functional approach is crucial at higher levels of production as well. EKO writers have already discussed the development of enterprises and branches with functional specialization which are so necessary for machine-building production, the production of functional units which the most varied kinds of technical equipment have in common, and functional units for interbranch application--bearings and microprocessors, engines and transmissions, cooling systems and hydraulic gears, all kinds of control devices, and so forth. The functional approach and the FSA make it possible to find optimal solutions to these problems.

Another aspect of the FSA is its possible role in the improvement of price setting.

As has been pointed out repeatedly in our press, the existing system of price setting does not sufficiently stimulate scientific and technical progress or increased production effectiveness. This is related to the fact that the prices of means of production are oriented primarily toward accounting for the actual expenditures on the part of the producers of the technical equipment.

As a result, the purchasers of the means of production--technical equipment and production materials--"do not trade," but strive for purchases at lower

prices. On the other hand, the creators of the means of production have the opportunity to have "profitable" production with inefficient management.

It is obvious that price setting should serve not as an "umbrella" which covers the poor work of the creators and consumers of the means of production, but a stimulator of technical progress and increased production effectiveness. It should apparently "imitate the competitor." But to do this it is necessary for the prices to be based on socially necessary expenditures and normatives which reflect a high technical level and efficient organization of production.

Where will the State Committee for Prices receive these normatives?

The answer is clear--as a result of the utilization of the FSA! The functional cost analysis should become a necessary constituent part of the work of planning organizations. Apparently it would be expedient to create FSA services everywhere and to give them a sufficiently independent status, like the status of the head bookkeeper. The result of FSA will be an element-by-element calculation of the normative production cost, which will be able to act as a basis for price setting and thus contribute to transforming it into an important lever in the progress of technical equipment and the effectiveness of production.

The articles published below are filled with content which characterizes the practice of FSA and, in particular, shows the experience of the Vatra Association where FSA is carried out in the process of technical preparation of production--in the stage of rough, technical and working plans, which produces a great economic effect. In general, as one can see from the work of this association, FSA is not only a passive analysis of expenditures, but active intervention into the functioning of all units of production and the management staff. During the process of FSA there is a refinement both of the content of functions that are performed by various subsystems of the technical equipment that is produced and of the functions of the engineering and other services of the enterprise, for example, the functions of the head technologist. Working up the designs for their technological nature is, in essence, the basis for increasing the effectiveness of production and reducing the capital-, material- and labor-intensiveness of the item. Providing for the succession of components in the design is a most important prerequisite for effective and economical modernization of the given technical equipment. Unification of standard and normalized parts means not only economizing on production expenditures, but also economizing during operation and repair.

In this connection, the standard of the enterprise, "Organization and Methods of Conducting FSA" and special forms should become extremely widespread. They should be filled in by technologists who economically substantiate the variants of technological and organizational decisions. This has already been introduced at Vatra. This association takes advantage of FSA equally fruitfully in the sphere of auxiliary production processes. The tendency toward extending FSA methods to all spheres of production and economic activity and to social processes in the collective is promising.

The range of problems whose efficient solution is promoted by the application of the functional cost analysis is extremely broad. Therefore there is

complete justification in the practice of the Ministry of Light and the Food Industry which, following the Ministry of the Electrical Equipment Industry, formed a coordination council of the ministry for functional cost analysis. The work of this council is discussed in the article by M. T. Yegorshev. This same ministry is also introducing such useful undertakings as the selection of base enterprises for FSA and the development of systems for controlling FSA at the enterprise. The statement by the author of the article seems justified: "The ramified organization of the control of FSA which has been adopted in the branch has the final goal of transforming it from an isolated method of efficiency which is pragmatic in nature to a main method for the development of cost accounting at the enterprise."

The article by the Czech engineers V. Dostal and Ya. Loubal, which was written in conjunction with Candidate of Economic Sciences T. A. Rybnikova, touches on important issues related to the application of computer equipment in individual stages of the FSA. Work in this area has just begun, but it will undoubtedly be continued in the near future.

#### FOOTNOTE

1. Quoted from the book: Kheyman, S. A., "Voprosy Avtomatizatsii v SShA" [Questions of Automation in the United States], Moscow, Mashgiz, 1960, p 62.

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## FUNCTIONAL COST ANALYSIS USED IN MANAGEMENT

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 12, Dec 84 pp 141-151

[Article by R. Yu. Yaremchuk, general director of the Vatra Production Association (Ternopol): "FSA as Method of Managing the Enterprise Economy"]

[Text] In order to provide for high rates of economic and social development of the collective, it is necessary to control all units of the enterprise's production mechanism in a new way. Additionally, the enterprise should be oriented toward a branchwide direction. In the lighting engineering subbranch, which includes the Vatra Production Association, this direction is the changeover to the output of energy-saving means of lighting. In and of itself this changeover essentially increases the advantage for the consumer. But if one were also to provide for a reduction of production expenditures, the association would achieve high final results.

The comprehensive system for increasing the national economic effectiveness of the output of new products (KS PNKhE) which has been developed and introduced at Vatra has already produced its first results. During the years of the 10th Five-Year Plan the national economic effect from the output of new technical equipment exceeded 42 million rubles, the growth rates of production volume amounted to 160.7 percent, and labor productivity increased by 141.6 percent. During 3 years of the 11th Five-Year Plan these indicators reached: for national effect--37.5 million rubles, for rates of growth of production--123.5 percent, and for rates of growth of labor productivity--118.4 percent. The method which provides for the vital activity of this system is FSA. We selected it even in the initial stage of the development of the KS PNKhE and have applied it in the majority of stages of the life cycle of the item even up to the many administrative functions. As we know, the main functions and expenditures on performing them come in the production process. This is where most of the effect that is realized during the output and operation of the item is formed--both for the consumer and for the manufacturer.

Of no less importance was the effect as a result of the analysis of the reduction of expenditures on the main control functions.

## Preparation of Production

It is a fairly complicated matter to organize the introduction of FSA while preparing production. Today the preparation of production, as a rule, involves a large volume of work, a considerable number of participants, and many events. In order for the FSA to be effective in this stage, it is necessary to improve the very methods of control of the development of the item and the technology of its manufacture. Vatra has developed a standard network model for the preparation of production which embraces all stages and regulates the sequence and duration of events, and also expenditures on conducting the work. The kinds of work are determined for each item and, on the basis of standard normatives, taking into account the complex of limitations, the time periods for their completion are designated. This way one provides for the achievement of the assigned indicators both of the item and of the technology for its production.

The FSA which, during the process of technical preparation of production, we apply in the stages of rough, technical and working planning, makes it possible to program fairly precisely the expenditures of live labor and materials on the manufacture of the item. The experience which has been accumulated in the association makes it possible to assert that most of the economic effect can be achieved as early as the stage of development of the item and the technology of its production. Let us give some examples. Specialists of the association in conjunction with workers of the light engineering institute of the VNISI developed a new unified series of lighting devices for luminescent lamps of the LPOZO type which are intended for the requirements of mass production. The utilization of the FSA methods during the process of technical preparation of production and the introduction of new forms of organization of technical creativity made it possible to reduce labor expenditures to one-sixth and the expenditure of materials by 18 percent as compared to series-produced analogs.

Similar results were also obtained with modernization of starter regulating devices (PRA) for luminescent lamps. In the stage of the working plan a functional cost analysis was conducted of the design and the technology of manufacture.

The analysis of the design made it possible to reduce the cost of individual components and the item as a whole because of the following measures:

the labor-intensive and material-intensive process of potting the apparatus on the basis of epoxy resins was replaced by soaking with lacquer on the same basis, which cut the expenditure of epoxy resins in half (from 60 grams to 30 grams per device);

the length of the magnetic wire was reduced from 71 to 66 millimeters; this led to a reduction of the average length of the coil, as a result of which an increase in the number of coils did not involve an additional expenditure of winding wires. The savings on electrical steel for each device amounted to 26 grams;

a new design was introduced for the housing and the base, which made it possible to achieve greater rigidity and reduce the magnetic dispersion fields to a minimum.

A functional cost analysis was also conducted for the design of the terminal block which was intended for hooking up the PRA. The overall reduction of the expenditures as a result of the FSA of the design of the device amounted to about 0.5 million rubles a year.

In parallel FSA was conducted for technological processes, which made it possible to single out the zones with the greatest expenditures. From the standpoint of the proportional expenditure of electric energy, the most energy-intensive were the thermal dehydration and coating of the tape and calibration of the magnetic wire. A reduction of expenditures in these sections of production alone makes it possible to save more than 50 tons of electric industrial steel annually and 0.5 million kilowatt hours of electric power.

An analysis of expenditures on fittings showed that most of them go for thermal operations and cutting the core. In order to reduce these expenditures it was suggested that they use a completely new design of furnace which makes it possible to apply a bar for repeated use (also a new design) made of heat-resistant steels. The number of bars used this way is reduced to one-25th the previous number. Moreover, we managed to eliminate from the technological process such auxiliary operations as pressing the bars out and repressing them which made it possible to release 22 people.

An analysis of the losses of materials in the basic operations showed that there were large expenditures on billets. It was recommended that they change the cut of the rolled steel. As a result, the coefficient of its utilization increased from 0.78 to 0.83. On the whole the FSA of the production technology of startup-regulating equipment made it possible to reduce expenditures by 160,000 rubles a year.

The example given here illustrates the effectiveness of the application of FSA in modernizing series-produced items. This is the most widespread case of the application of FSA. But our experience with FSA makes it possible to assert that this zone is relatively not very effective. Significantly better results are achieved during technical preparation of production for newly developed items. In this case FSA is a powerful stimulator of technical creativity and contributes to the creation of the optimal design for the item and the technology for its production. As concerns the reduction of expenditures on preparing for production, it is important to utilize more fully the implements of labor that have already been created (fittings, special technological equipment, and instruments). This also makes the process of modernization less advantageous than new development.

At the same time extensive introduction of FSA methods during the creation of new items requires a large amount of preparatory work. At each enterprise it is necessary to develop concrete methodological and normative documents and to stimulate creative work in a new way.

It is also important for participants in the creation of new technical equipment to interact within the framework of a clear-cut system. In our association we have developed and introduced functional matrices of responsibilities which regulate the work of the performers of this work in all stages of technical preparation for production. Thus the quality of the performance of duties envisioned by the functional matrices is controlled.

#### Main Functions of Controlling Scientific and Technical Progress

Control of scientific and technical progress at an enterprise includes not only the preparation for production of a specific item or unified series of items, but also a system of functions for re-equipping and servicing production as a whole. This means manufacturing fittings and special technological equipment, planned preventive repair, energy service, energy supply, laboratory service, metrological support, operation of fittings, and so forth. Another constant function for the Vatra Production Association is improvement of technology and working conditions for general machine building and specific productions (casting, stamping of parts in small series, production of parts from plastics, and production of coatings).

Thus the developing of designs to perfect them technologically is a constant function of the head technologist's service. Let us look at it in more detail.

The following requirements are placed on the design of the item:

classes of cleanliness of the surface and precision of the manufacture of parts and assembly units, kinds of galvanized coatings and other characteristics of items are established separately;

new makes and type sizes of materials and new purchased instruments are applied in minimum quantities;

materials which are in critically short supply are used only with good justification;

standard and normalized parts which are produced by the enterprise are used as much as possible;

the sequence of components is well-substantiated;

complicating the design has to be justified;

there is the possibility of applying highly productive technological processes and means of technological outfitting;

the possibility of manufacturing elements of parts by casting without additional mechanical processing is taken advantage of to the greatest possible extent.

These requirements have been reflected in the enterprise standard entitled "Organization and Methods of Conducting FSA." A special form is also

envisioned for technologists here. It contains economic substantiation of one variant of a decision or another and makes it possible to evaluate it from the standpoint of its effectiveness and to coordinate the result with the stimuli.

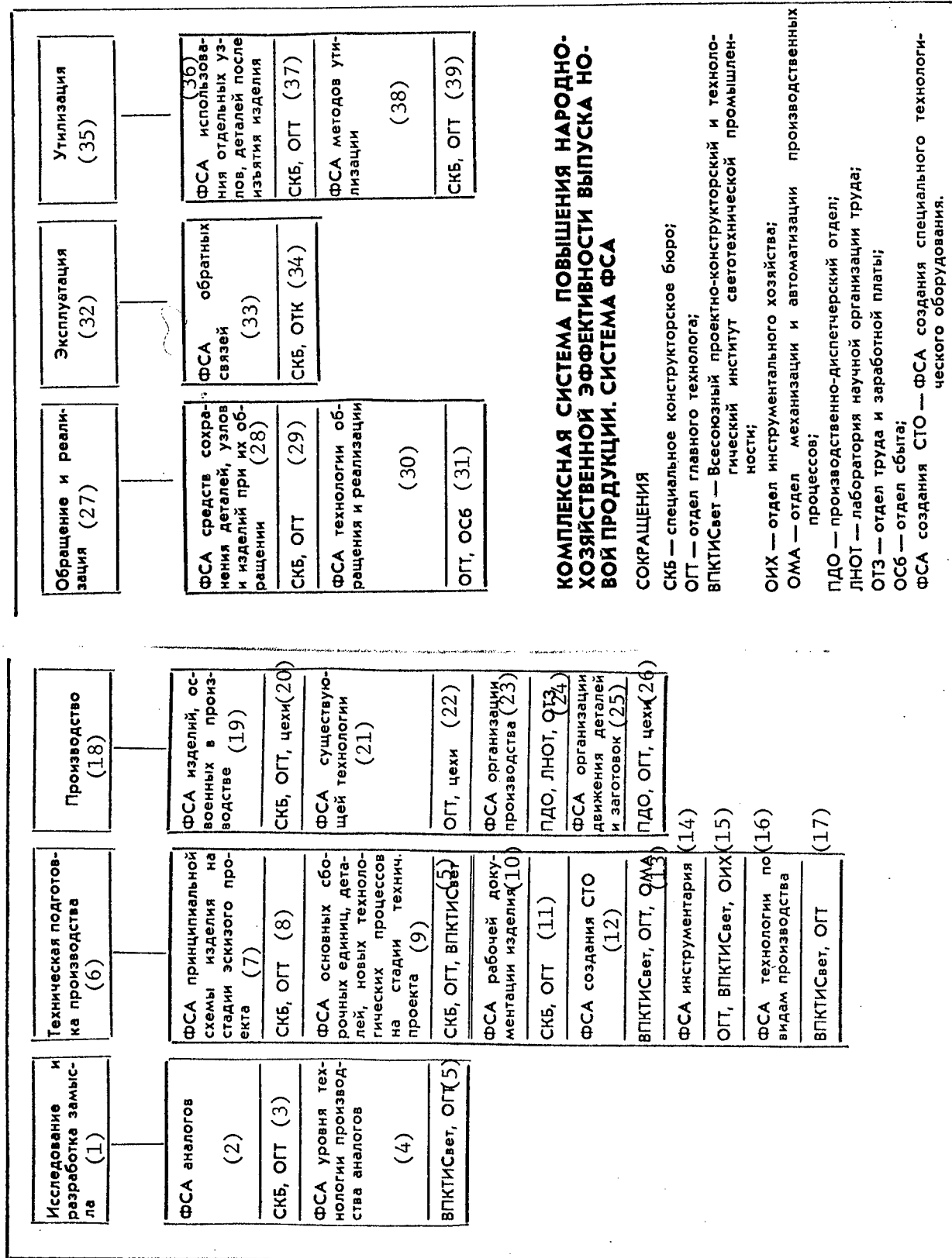
Providing for these permanent and strictly regulated functions means making significant expenditures. In order to evaluate the expediency of the latter, we have used FSA. The method has helped to discover previously concealed reserves for reducing production outlays, which made it possible to solve a number of crucial problems related to improvement of the organization of auxiliary production. Thus an analysis of the cost of the function of reproduction of technological fittings made it possible to establish numerous cases in which too many fittings are ordered, and when new ones are manufactured their cost increases, that is, unnecessary expenditures were revealed and, moreover, they were increasing from year to year. As measures against this we organized the control of instrument production, developed standard technological processes and labor and material normatives for the production of technological fittings, and introduced unified price lists for fittings. This made it possible to increase the output of fittings in the same production space by 35 percent and to increase the labor productivity of the instrument workers.

In this same instrument production FSA revealed unjustified expenditures related to the comparatively low resistance to wear and tear of the working parts of the fittings even though they were made of relatively hard materials. The association's technological institute conducted research and developed effective measures for increasing the wear-and-tear resistance, which provided an economic effect of 80,000 rubles a year.

#### Analysis of Control Functions

When analyzing a number of functions of production control we revealed the main reasons for the slow reduction of outlays for mass kinds of items. It turned out that the basis of the high outlays was the imperfect system of accounting for intershop movement of parts, which leads to unjustified losses, frequently considerable ones, during their production. In order to eliminate this factor, the indicators for cost accounting for the manufacturing and assembly shops were changed. The payment for the workers of the assembly shops in particular was made dependent on the actual output of items that were to be released to the warehouse. The brigade leaders were changed over to payment according to the actual application of high-quality parts in the item.

Other reasons for high expenditures in production were also revealed. The functional cost analysis of the technological routes of the most widespread and largest parts showed the need to change these routes and also to form individual closed object sections--this helped to reduce the cost of processing. Many reserves for reducing expenditures were revealed when conducting the FSA of the functions of planning and operational regulation of production.



[Key on following page]

Table on p 148 of EKO 12      Comprehensive System for Increasing the Economic  
Effectiveness of the Output of New Products, FSA System

Key:

1. Research and development of idea
2. FSA of analogs
3. Special design bureau, Head technologist's division
4. FSA of level of production technology of analogs
5. VPKTISvet, Head technologist's division
6. Technical preparation of production
7. FSA of principal design of item in rough draft stage
8. Special design bureau, Head technologist's division
9. FSA of basic assembly units, parts and new technological processes in the stage of the technical plan
10. FSA of working documentation of item
11. Special design bureau, Head technologist's division
12. FSA of creation of special technological equipment
13. VPKTUSvet, Head technologist's division, Division for mechanization and automation of production processes.
14. FSA of instruments
15. Head technologist's division, VPKTISvet, Tool organization division
16. FSA of technology for various kinds of production
17. VPKTISvet, Head technologist's division
18. Production
19. FSA of items assimilated in production
20. Special design bureau, Head technologist's division, shops
21. FSA of existing technology
22. Head technologist's division, shops
23. FSA of production organization
24. Production-dispatch division, Laboratory for scientific organization of labor
25. FSA of organization of movement of parts and blanks
26. Production-dispatch division, Head technologist's division, shops
27. Circulation and sales
28. FSA of means for protecting parts, components and items during circulation
29. Special design bureau, Head technologist's division
30. FSA of technology for circulation and sales
31. Head technologist's division, sales division
32. Operation
33. FSA of feedback
34. Special design bureau, Head technologist's division
35. Salvage
36. FSA of utilization of individual components and parts after item is removed from production
37. Special design bureau, Head technologist's division
38. FSA of salvage methods
39. Special design bureau, Head technologist's division

[Key continues on following page]

[Key continues]

Abbreviations:

SKB--Special design bureau;  
OGT--Head technologist's division  
VPKTISvet--All-Union Planning-Design and Technological Institute of the Lighting  
Equipment Industry  
OIKh--Tool organization division  
OMA--Division for mechanization and automation of production processes  
PDO--Production-dispatch division  
LNOT--Laboratory for scientific organization of labor;  
OTZ--Division for labor and wages;  
OSB--Sales division  
FSA sozdaniya STO--FSA of the creation of special technological equipment

The level of expenditures on functions for control of economic activity essentially influences the effectiveness of management. The latter can include, for example, functions of transportation service, maintenance of supplies of material values, organization of warehousing, sales, provision of contractual commitments, and so forth.

In order to conduct FSA for this group of functions the Vatra Association selected a somewhat different approach: the functional cost analysis is combined with procedures for one control function or another, the majority of which are the daily (weekly) duty of the worker. This makes it possible to establish operational control over the formation of expenditures which exert an influence on the results of management.

We are also introducing FSA in other spheres of management of the economy. The method will be applied for analyzing the articles of expenditures on production, the utilization of fixed and circulating capital, labor normatives and the system for evaluating the quality of labor. In the future the FSA method will be extended to all spheres of production and economic activity and to social processes in the collective. To accomplish this, the following has been done at Vatra:

an FSA committee has been organized with subcommittees according to function (for scientific and technical progress, economic development, management activity, production activity, capital construction and social development);

a schema has been approved for the organizational and functional structure of the FSA and the FSA's for the stages of the life cycle of the item (see Fig. 1);

the sequence for disseminating the method has been established according to this organizational and functional schema;

they have put into effect a standard entitled "Organization and Methods of Conducting FSA," which establishes the policy and methods for FSA during modernization of items and technological processes, the creation of new items in the stages of the rough draft, the technical draft and the working draft, and when coordinating the design for its technological characteristics;

methods have been developed for conducting FSA for current repair of equipment, planned preventive repair and energy service;

the "Methods for Conducting FSA for Metrological Expertise for Design and Technological Documentation" have been introduced.

Additionally, a new system of material incentives is going through the stage of experimental introduction. It is called upon to increase the creativity of workers in all stages of the life cycle of the item, and also in all spheres of economic activity. One of the peculiarities of the new system is that part of their remuneration for the creation of new technical equipment goes for stimulating progressive ideas which could lead to radical changes in the technology for the manufacture of the item or which touch upon the main principles of its creation.

Extensive utilization of the FSA method in management of the enterprise's economy opened up the road for economic-mathematical methods and computer equipment to enter this sphere. The number of problems that are being solved with the ASUP is increasing. All this helps to reduce the time periods for conducting FSA for various services, and also to improve the quality of this work.

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## FSA USED IN ELECTRICAL EQUIPMENT PRODUCTION

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 12, Dec 84 pp 151-158

[Article by A. P. Kovalev, candidate of technical sciences, Moscow Automotive Mechanics Institute, Yu. G. Ivchenko, chief of the plant design bureau, and N. I. Leonov, candidate of technical sciences, head designer of the Moscow Plant for Automotive and Tractor Electrical Fittings imeni 60-Letiye Oktyabrya: "Peculiarities of FSA for Automotive and Tractor Electrical Equipment"]

[Text] Methodologically, FSA of designs for machines is the same for all kinds of production and items in machine building. But organizationally it can have its own peculiarities, depending on the type of production, the degree of its specialization and cooperation, the nature of the products, and the level of technology.

Typical of our subbranch is narrow specialization of enterprises, mainly in particular objects; high design sequence of models of machines; the development of mainly intraspecific (that is, for families of models and modifications) unification of design elements; a fairly labor-intensive cycle of scientific research and experimental design work and preparation for production of new kinds of items. And the cycle for scientific research and experimental design work occupies a position with respect to basic production which is anonymous to a certain degree.

In connection with this the FSA with mass production of automotive and tractor electrical equipment (ATE) is characterized by the following peculiarities:

a more efficient sphere of its application--scientific research and experimental design work and preparation for the production of new models;

along with analysis of production expenditures, special reliance should be placed on analysis of factors which determine the level of operational outlays, namely: reliability, durability, suitability for repair, fuel economy and so forth;

to systematically evaluate the economy of the design analogs that are produced by other enterprises, including foreign firms, and to provide for the ability of exported items to compete on the foreign market;

to develop the group method of FSA which embraces type sizes of the series and unified groups of items;

organizationally and methodologically to coordinate all kinds of economic and analytical work during the creation of new technical equipment (technical and economic analysis, technical and economic substantiation, scientific and technical prognostication, economic optimization of parameters, FSA, and so forth);

to develop methodological conceptions of FSA for mass automated flow-line production.

The ordinary streamlining FSA presupposes improvement in the design of the items that are produced. In series production such local improvements from series to series are quite possible, and along with other measures they maintain a high level and high quality of the products. Mass flow-line production is another matter. Here not all design changes are possible and economically expedient.

Thus restructuring of technology that is based on specialized equipment and costly special fittings requires significant investments and disturbs the production rhythm. Another difficulty lies in the fact that the design changes violate the interchangeability of spare parts and increase the list of them. This leads to increased cost of repair and servicing of automotive equipment during operation.

In mass production of ATE design changes are usually introduced either under the influence of the development of technology and the introduction of new technical processes and materials, or, in extreme cases, in order to provide for reliability as a reaction to complaints from consumers or clients. In this case a large number of design changes is perceived most frequently as evidence of poor work on the part of the designers, who have made many mistakes in planning.

Hence we draw the conclusion: with respect to the main products in mass production it is necessary to devote more attention to the utilization of FSA during the course of scientific research and experimental design work and the preparation of production, that is, the application of the so-called planning form of FSA. Thus the design of the item from the beginning of its development will include progressive technological decisions, and this to some degree precludes the need for subsequent streamlining and restructuring of production, and it also guarantees stable output of high-quality technical equipment. In mass production of ATE they use the tactic of accumulating technical ideas and embodying them completely in the development of the next model or when updating technological fittings. Thus both design and technological decisions are worked out comprehensively. An example of this can be the search for an economical design and technology for magnetic wires for electric machines (generators and starters) using FSA.<sup>1</sup>

The existing design for magnetic wires in the form of a set of layers of electrical steel presupposes a stamping process whereby more than 50 percent

of the steel goes to waste. Thus in order to obtain a stator for an automotive generator it is necessary to waste approximately one kilogram of steel. The new solution allows for waste-free design of magnetic wire which is made of corrugated strips. And the technology for its manufacture also changes radically. The new design and the new technology were developed taking into account the requirements of mass production, that is, with an eye to possible complete utilization (with small adjustments) of the equipment that exists at the enterprise and its suitability for repair.

Narrow aggregate-by-aggregate specialization of design subdivisions at ATE enterprises contributes to informing the specialists well about innovations in domestic and foreign technical equipment and the technology of the items that are assigned to them. Here we experience not so much a shortage of ideas as limited production and technical capabilities.

What has been said does not mean that under conditions of mass production it is unacceptable to use the adjusting form of FSA, but simply that the sphere of its application is limited. It is more acceptable for local improvements of functionally independent and relatively uncomplicated elements of electrical equipment. As our experience shows, good results are achieved when FSA is used for consumer goods that are manufactured from material wastes. Under the influence of the demand and the consumer requirements, the designs of these items are most frequently revised and their production is distinguished by its flexibility.

The experience in applying FSA for ATE items has shown the need for further improvement of the methodological and calculation-analytical apparatus of the FSA. For well-developed designs it is difficult to count on direct discovery of functionally unnecessary elements. The reserves of the design here are hidden in nature and a more precise instrument of analysis is needed to reveal them. Let us note briefly those aspects in the FSA "technology" to which attention should be devoted.

A major constituent part of FSA is analysis of the functions of the items. The functions can be classified according to many indicators; a detailed classification of them is given in the main provisions for FSA methods. But in practice two of them are the most important: the relationship between the functions and the object (general object and intra-object) and the degree of their significance.

We are assuming that the significance of a function is determined by its relationship to the main work process that is performed by the object when functioning. If a function reflects the work process or its stages, then it is a basic one. All basic functions are carried out necessarily through transferring energy, mass or information (signals). If the function does not ensue directly from the working process, but is directed toward providing for it and supporting it, then it is considered to be auxiliary or supporting. Among the auxiliary functions are those which combine, separate, establish, limit, protect and so forth. Hence it follows that certain devices can perform only auxiliary functions, regardless of whether or not these devices are regarded as independent objects of analysis or elements of larger objects.

For example, various fasteners (screws, bolts, rivets and so forth) are bearers of purely auxiliary joining functions.

How does one obtain the composition of functions for the object? In the literature on FSA there are plenty of recommendations regarding this. Our experience shows that the strictest and simplest idea of the content and composition of the functions is provided by the method of directed graphs. A graph such as the totality of chains of functions is in essence a description of the working process of the object and the flows of energy, mass and control signals in the language of functions which ensue.<sup>2</sup>

Only an engineering approach should lie at the basis of an analysis of functions. It seems that abstract formal and logic devices like those described in the American method FAST can easily lead to confusion and various interpretations in the description even of the simplest technical devices.

Functions cannot be formulated chaotically: it is difficult or perhaps even impossible to classify and order functions that have been written down unsystematically. They must be written down in a particular sequence, beginning with functions of the object as a whole (basic and auxiliary) and ending with functions within the object (basic and auxiliary). They say that a designer thinks in blueprints, and this is correct. Therefore a greater effect is produced by entering the functions directly on the assembly blueprint or on the general blueprint than is produced by presenting the functional schema in the form of individual tables or diagrams.

And one more remark concerning the analysis of functions. With respect to well-developed items the goal of this analysis should apparently consist not so much in finding any unnecessary functions (there might not be any) as in formulating the minimum necessary functions--this will suggest ways of embodying them more economically. That is, the functional description should provide a clear statement of the task and should activate creative search for new ideas.

Another important aspect of FSA is the analysis of expenditures. It should be emphasized that along with the analysis of production expenditures one cannot forget about operational expenditures. During the life cycle of automotive equipment they surpass expenditures on production severalfold (sometimes tenfold). But the prediction of operational expenditures is a complicated matter and therefore it is necessary to have at least an evaluation and analysis of factors that influence these expenditures. For ATE items the main operational factor is reliability. The relationship between production expenditures and the level of reliability can serve as a criterion for evaluating the technical variants that are being compared.

FSA guidelines recommend distributing the expenditures among individual functions. This creates great difficulties of a methodological nature. Such an approach is justified if the decisions are subsequently perfected with respect to each function individually. But in practice the designs are perfected comprehensively, including several functions at the same time. And one change or another can reduce expenditures for one function and at the same time increase them for another. Therefore for practical purposes one should

consider it sufficient to determine expenditures for groups of closely interconnected functions.

The final goal of FSA is to introduce a technical innovation rapidly and efficiently. Success depends on a correct selection of a technical decision. Unfortunately, economic evaluations still do not reflect the entire diversity of conditions and circumstances of concrete production and therefore they cannot serve as a unified argument when analyzing variants. It is necessary to take into account many factors on which the process of introduction depends, among them being the possibility of utilizing equipment and fittings which already exist at the enterprise, the possibility of applying waste-free technology and also the shortages and the degree of unification of materials and batching items, and so forth. It seems that problems related to innovation activity at enterprises are in need of serious theoretical development.

On the basis of the methodological points presented above, a functional cost analysis was conducted for the rectifier block of an automotive generator.

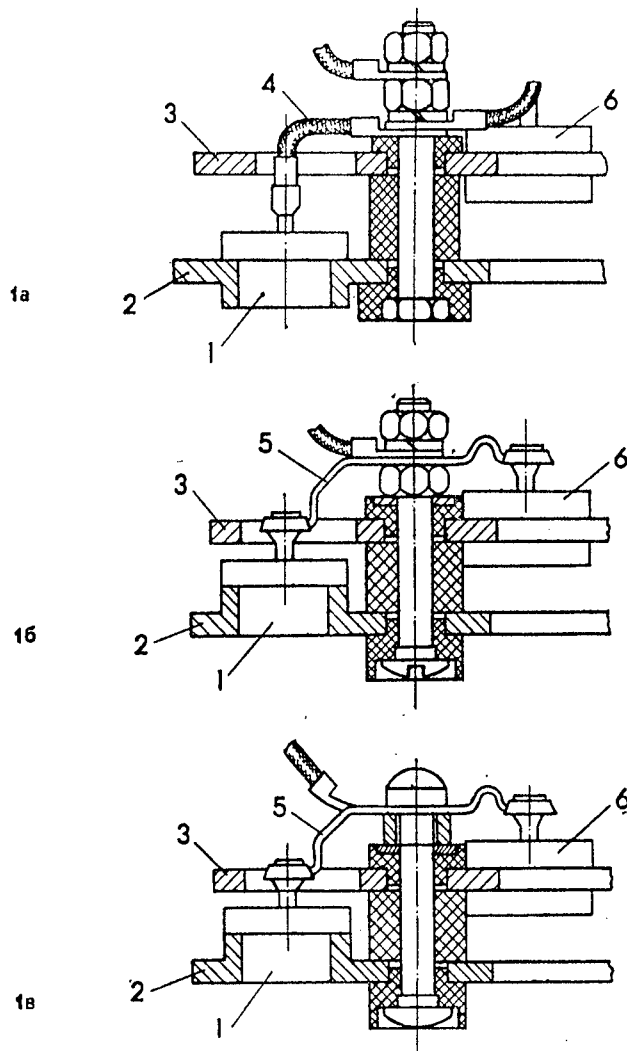
The basic object-wide function of the rectifier block is determined by the requirements of a higher-level system, that is, of the generator itself, and its formulation--"rectifies alternating current." On the basis of this function one can speak about various rectification systems.

With the help of the method of studying energy flows, the basic intra-object functions were established: "brings in alternating current," "lets through a positive half-wave," "lets through a negative half-wave," "removes the plus of the constant current," "removes the minus of the constant current." A generalized name has been given for the bearer of each function.

Then variants were considered for the bearers of the basic functions and the methods of their mutual distribution. They decided on a two-level distribution of diodes in arc-shaped bars, which involves limitations on sizes.

When analyzing the design of the block they formulated the minimum number of auxiliary intra-object functions. First they determined all of the joining functions among the bearers of the main functions, and then the separating (isolating) functions, which were brought about by the need for electrical insulation of certain parts of the design from others. Then they found the fixing functions which provide for strict positioning of each element in space. Finally, they revealed the functions that determine the length of operation. In this example, the functions of cooling the valves are included among them.

Having thus obtained the complete composition of the necessary functions, they investigated the design decisions in the actual object. Then they revealed the so-called "centers of gravity" for the various expenditures, that is, those constituent parts which require immediate improvement in order to provide for economy.



In the initial design of the rectifier block (see Fig. 1a, which shows one of the three phase parts of the block in cross-section) the most significant in terms of expenditures turned out to be the function "brings in alternating current to valves 4 and 6)." Several parts participate in carrying out this function: cables with lobes 4, bolts, nuts and screws. And almost half of the labor-intensiveness of the assembly went for joining these elements together. Moreover, in tightening the nuts the cables sometimes became mixed up and there were breaks in the joints.

In the creative stage of FSA an improved design for the rectifier block was suggested (Figure 1b) in which this function was performed basically by one part--the joining bar 5. This made it possible to simplify assembly operations significantly and to make them less expensive. At the same time it became possible to reduce expenditures on other functions as a result of the reduced mass of the parts. With subsequent development a new variant was suggested (Figure 1c) where the screw joint was replaced by a rivet. As a result the labor-intensiveness of assembly is reduced and the durability of

the item during operation is increased. A comparative evaluation of the variants in terms of production expenditures is presented in the table.

Table--Production Expenditures--Variants

<u>Variant</u>	Expenditures, kopecks/unit			<u>Total Direct Expenditures</u>
	<u>Basic Materials</u>	<u>Batching Items</u>	<u>Wages of Production Workers</u>	
Initial design	41.2	210.3	12.0	263.5
Variant 1	27.0	207.5	8.5	243.0
Variant 2	27.0	205.5	5.3	237.8

From the table one can see that variant 2 is the most economical. The savings on current production expenditures from the introduction of the improved design of the rectifier block with an annual output of 600,000 amounts to (2.63 rubles - 2.37 rubles x 600,000 = 156,000 rubles).

Research has shown that FSA is an effective means of searching from and utilizing reserves in design and technology. The development of the methodological apparatus for FSA makes it possible to apply it successfully in mass and large-series production.

#### FOOTNOTES

1. Leonov, N. I. and Ivchenko, Yu. G., "The Search for New Variants of Waste-Free Technologies for Manufacturing Elements of Electrical Machines on the Basis of FSA," seminar materials, MDNTP imeni F. E. Dzerzhinskiy, Moscow, 1982, pp 115-120..pa
2. The method is described in greater detail in the book: Kats, G. B. and Kovalev, A. P., "Tekhniko-ekonomicheskii analiz i optimizatsiya konstruktsiy mashin" [Technical and Economic Analysis and Optimization of Machine Designs], Moscow, "Mashinostroyeniye," 1981, pp 78-82.

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## FSA USED IN MACHINE BUILDING

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 12, Dec 84 pp 159-163

[Article by M. T. Yegorshev, candidate of economic sciences, chief of the planning and economics administration of the Ministry of Light and the Food Industry (Moscow): "FSA in Machine Building for Light and the Food Industry"]

[Text] The introduction of FSA in the branch of machine building for light and the food industry and the production of household instruments began in 1976. In 1978 the ministry issued an order which determined the main directions for functional analysis and the organizational policy for the branch system of FSA, and a coordination council was formed. Its goal was to direct the activity of all units for branch management for organizing FSA agencies, to supervise the preparatory work and determine the sequence for the changeover to the new method, and also to hear the reports from managers of all-union production associations (associations, enterprises and organizations) concerning the course of this work and to evaluate it. Additionally, the coordination council considers and approves training programs as well as plans for training and increasing the qualifications of specialists in the branch who are engaging in FSA, and it resolves disputes that arise in relations between organizations and enterprises of the branch when conducting FSA.

An important function of the coordination council is to make decisions concerning the transfer of the rights of the holders of originals of technical documentation to other organizations or enterprises if this is necessary (for example, it is necessary to accelerate the realization of FSA recommendations within the framework of the entire branch).

During the introduction of FSA there arose a need to determine the head associations and enterprises in the structure of each VPO. This was brought about primarily by the extreme shortage of specialists and the instability of sources of information as well as the lack of experience in applying the method in domestic machine building, the limited financing and also the initial lack of confidence in it. Moreover, under the conditions of multiprofile design and technical and specialization of machine building for light and the food industry, it was unreasonable to develop work for applying the FSA without revealing the peculiarities of the new method. Haste could

have caused large losses of time and money. The selection of the base enterprises for FSA was conducted depending on whether or not they had management workers who were interested, and depending on the creative attitude of the personnel and their recognition of the need to transfer their experience in assimilation of this method to other enterprises and organizations. In making the selection it was also important that the profile of the enterprise correspond to that of the majority of enterprises in the VPO.

Thus the base enterprises in the various specializations were: in textile machine building--the Klimov Machine-Building Plant imeni V. N. Doyenin; in machine building for the food branches of industry--the Smelyansk machine-building plant and the Rostov-on-Don machine-building plant; in commercial machine building--the Perov Torgmash Plant; in printing--the Leningrad Poligrafmash Plant; and in glass production--the Steklomash Production Association.

By naming the base enterprises of the branch here we hope to interest the managers of enterprises in service branches of industry--light, the food, meat, dairy and others--in this progressive method. The joint work of the manufacturer and the consumer of the products makes it possible to expand the framework of the method before analyzing the operational systems of machines throughout the entire technological chain--from the preparation of the raw material to the obtaining of the intermediate or final product.

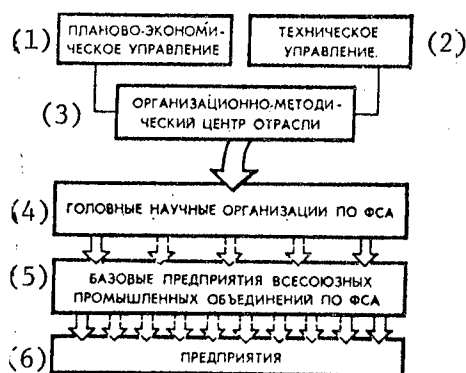
The experience that has been acquired has made it possible to determine the following long-range system for 1981-1985.

The system has undergone the test of time and has proved itself to be viable. At the upper level the planning and economics administration of the ministry organizes and participates directly in the development of methodological materials and supports the work for FSA in the VPO and in the associations and enterprises. And the technical administration devotes most of its attention to the activity of the head scientific organizations for FSA.

In the all-union industrial associations the head engineer is responsible for the organization, development and realization of the results of the FSA, and the immediate organizers of the work are the planning-economics and technical divisions.

The system of management is more complicated in the enterprises. This is explained, on the one hand, by the complexity of the methodological and normative documents themselves and, on the other, by the difficulties in the organization of the work in all of the subdivisions of the enterprise.

The ramified organization of control of FSA which has been adopted in the branch has the final goal of transforming it from an isolated pragmatic method of streamlining into the main method for the developing of cost accounting at the enterprise.



### Management of FSA in Machine Building for Light and the Food Industry

#### Key:

1. Planning-economics administration
2. Technical administration
3. Branch organization and methods center
4. Head scientific organizations for FSA
5. Base enterprises of all-union industrial organizations for FSA
6. Enterprises

At the beginning of the 1980's machine building for light and the food industry moved on from the creation of individual machines, sets of equipment and lines to the construction of systems of the machines which make it possible to provide for mechanization and automation of the entire production process: from the processing and preparation of initial raw material to the receipt of the intermediate or final product.

The scientific and technical achievements of the branch in the area of textile machine building made it possible to develop, create and extensively introduce into textile production a principally new kind of technology: spindleless spinning and shuttleless weaving. Pneumatic spinning machines and shuttleless and pneumofoil automatic looms provide for increasing labor productivity 2.5-3-fold as compared to automatic shuttle looms. Highly productive automated spinning and dyeing-spinning equipment is being introduced into the system of machines. As a result, at textile enterprises of Ivanovo Oblast alone during 1976-1980 27,000 workers were released.

The first industrial series of machines for continuous fabric making was manufactured in 1982. This new form of weaving, which has been unknown in world practice up to now, is capable of radically transforming the technology of textile production. It is expected that the increase in labor productivity in weaving will increase three-fourfold as compared to production on the basis of shuttleless and pneumofoil looms.

The limits of the productivity of technological equipment for the food, meat, dairy and fish industry are also fairly broad.

When creating systems of machines, different requirements are placed on technical and economic analysis. Its main direction is the creation of stable

economic prerequisites for achieving high consumer qualities of the items with a simultaneous reduction of material and labor expenditures.

A sharp increase in requirements on product quality and technological processes means that the selection of one design decision or another cannot be based only on an evaluation of the optimal amount of production expenditures. There arises a need to determine the degree of reliability and the quality with which the item or process performs its functions during the course of operation.

Because of this the main provisions for conducting FSA of items envision an analysis of their economically expedient technical level, the weak places in their design and an evaluation of operational outlays for several variants of technical decisions.

The element-by-element economic analysis of items which is applied at enterprises of the branch provides for revealing increased expenditures, especially for auxiliary functions. Most frequently they are reduced without detriment to the quality of the product. Inefficient expenditures on providing for both basic and auxiliary functions become apparent because the parts are broken down into their individual elements.

The results of the analysis of a number of components and items of mass production whose designs are developed over a period of time are extremely interesting. At the Podolsk Mechanics Plant they conducted a functional cost analysis of the "zigzag" mechanism for a domestic sewing machine of class 142. It turned out that without reducing the quality of the machines it was possible to reduce the number of parts of this mechanism from 87 to 54 and the number of assembly units--from 12 to 10, to reduce the production cost by 0.9 rubles and to obtain an economic effect in excess of 500,000 rubles.

The FSA conducted for the KV-60 electric engine at the Lvov Elektrobytpribor Plant made it possible to save 155,300 rubles on the production cost of the products. The labor-intensiveness of the manufacture of the engine was reduced by 14.6 percent, and the annual economic effect amounted to 152,400 rubles. At the Perov plant for commercial machine building a functional analysis of the SM-ZP component of a vending machine made it possible to reduce its production cost by 25.1 percent and to cut its weight in half. Active work for introducing FSA at the Smelyansk machine-building plant, the Odessa printing machine plant, the Riga Latpishchemash Plant and many other enterprises shows the high effectiveness of the results: the production cost of the items is regularly reduced by 3-25 percent, material-intensiveness--by 5-20 percent, and labor-intensiveness--by 3-15 percent. Moreover the quality of the items improves or stays at the previous level.

In 1981 when determining the list of items for conducting the FSA we deliberately selected those which are significantly singled out in terms of the production volume, the complexity of the design, the materials that are applied and the technological processes. The economic effect from functional analysis was fairly high everywhere. For example, at the Perov plant for commercial machine building the reduction of the production cost of the AV-2 automated machine amounted to 75,600 rubles for the entire volume of output,

and at the Lvov Elektrobytpribor Plant for Vibrating Massagers this reduction amounted to 21,700 rubles, and so forth.

The economic effectiveness of the application of FSA for the group of enterprises of the branch of machine building for light and the food industry in 1981 was relatively small, but even it amounts to about 1 million rubles. It is planned to improve the work for introducing FSA in the branch during 1983-1985.

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## COMPUTER EQUIPMENT USED IN FSA

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 12, Dec 84 pp 163-169

[Article by V. Dostal, candidate of economic sciences, T. A. Rybnikova, candidate of economic sciences, Sverdlovsk Institute of the National Economy, and Ya. Loubal, engineer, Scientific Research Institute of Technology and Economics of Machine Building (Prague): "The Possibilities of Applying Computer Equipment in Certain Stages of FSA"]

[Text] Functional cost analysis is becoming a part of the system of enterprise management. Its application at all stages of the life cycle of the items confirms the high effectiveness of this method. But conducting the analysis requires additional expenditures of time during the process of technical preparation for production. Therefore it becomes extremely crucial to formalize if not all, at least individual stages of FSA in order to mechanize and automate its devices and to apply computer equipment extensively.

Methodologically, FSA is fairly complicated both for streamlining, modernizing and redesigning items and for improving technological production processes, and also management, organizational and information systems. This complexity is brought about by the diversity of operations, the application of methods and approaches from economics, psychology, modeling theory and mathematics and their support with the experience and knowledge of specialists in planning-design and other areas.

Consequently, from the standpoint of formalization we are speaking about a diverse and complicated process, and a certain amount of simplification is inevitable when modeling it. Depending on the complexity, extensiveness and labor-intensiveness of the problem, one selects various approaches and working methods (with a unified overall methodology). For example, when improving the designs of simple items which include a small number of elements (about 10 parts or assembly units), the functions are analyzed on the basis of a tabular or matrix model of their interconnection. Analysis of complicated designs which include hundreds and sometimes even thousands of parts is impossible without applying the theory of graphs, the morphological method with the enlistment of devices of combination studies, factorographic information, and

so forth. Thus every appendix of functional cost analysis has its own specific features.

In its essence functional cost analysis is decision-making, and individual steps, work devices and operations of this process are strictly delimited in terms of the stages of the working plan. Consolidated stages are broken down into information-preparatory, analytical (including the formulation of functions and the construction of a functional model), creative (search for and formation of variants), investigatory (evaluation of variants according to a particular criterion) and recommendatory.<sup>1</sup> Here it is possible to begin the next stage only after the completion of the preceding one. Thus the formulation of functions and their analysis (second stage) are carried out after the object of analysis has been selected in the first stage.

Practical experience shows that division within each stage into small blocks that correspond to the nature of the approaches and methods that are used is most convenient. This makes it possible, depending on the specific case, to include in the methods individual jobs in various combinations and at various levels of formalization, which makes it flexible.

When evaluating the possibility of the utilization of computer equipment it is necessary to investigate the principles for the application of algorithms to the work or the steps in individual stages of the working plan. In spite of the fact that the utilization of computer equipment is not an innovation here, the problem of organically including FSA in the automated system for control of the enterprise (ASUP) is still not sufficiently studied. To do this, it is necessary to investigate the following two problems.

What kinds of work or steps in the stages of the working plan for FSA can be subjected to algorithms and how does one provide for carrying this out through the utilization of computer equipment?

What connections exist between the utilization of computer equipment when conducting FSA, the ASUP systems that are created and being planned, and their data bases?

The possibilities of utilizing computer equipment, taking into account these main issues, will be considered below.

The first stage in the methods for FSA include the selection of the object of analysis: one evaluates the technical level of the items and the expenditures on their production and determines the prospects for output and other work for gathering information and organizing subsequent investigation. Experience shows that the majority of procedures in this stage are suitable for the use of algorithms.

In order to evaluate the economic indicators (profit, production cost), one uses the existing ASUP programs which are intended for determining production expenditures per one item, order, series or batch-up items.

When selecting the object one should proceed from the plan for future output over a long period (annual or five-year) using the base figures of the ASUP

concerning the volumes of production of individual items. On the basis of the figures concerning the capacities required for the production of individual items and the plan for the utilization of capacities one can calculate the variant that is closest to the optimal. Here the calculations take into account a reduction of expenditures on the basis of the application of FSA, the influence of increased series production for the required capacities, and so forth. In this case one can use the existing ASUP programs.

The items selected for analysis predetermine the composition of the FSA working group. If the base figures for the ASUP contain a mass of "information about workers," the program for selecting the FSA group can be developed in such a way that, in the first place, it includes specialists of the corresponding occupations and, in the second place, that certain workers are not overloaded as a result of being included in several groups or, conversely, that they are not underloaded. Naturally, the plan for the group is developed with the help of computer equipment and should be evaluated by an analyst or the group leader.

The nature of the cooperation among the specialists is planned on the basis of a balance of occupational formations. With this approach to drawing up the plan, which is based on the priority of assignments and information about the workers, no great efforts are required for the programming and calculations. The sequence of the work is established on the basis of network schedules, most of which are included in ordinary programming software.

The work group that is created gathers information about the selected object of analysis, evaluates its design complexity, analyzes the distribution of expenditures and selects elements (assembly units, parts) for more careful investigation. Work of this nature, which requires significant expenditures of time and resources, is an area for extensive application of computer equipment.

At the present time at the majority of enterprises there is an abundance of information which is processed with punch card or electronic computer equipment. In the majority of cases this is sets of data that pertain to calculation and analysis of production costs with various calculation systems. A number of enterprises have created sets of tables of expenditure coefficients for one item. In a similar way tables of expenditure coefficients are created for materials. If while conducting FSA it is necessary to analyze the production cost of an order or an item for which such data has not been developed, the input normative data are obtained from technological charts and the specifications of the item.

From what has been said above it follows that the analysis of the expenditures on the selected object involves sets of base data for ASUP and a group of "information concerning producers." One can state that in this stage of the work of the FSA group computer equipment can be used expediently for analyzing:

the design of the selected items;

expenditures of design groups (assembly units and parts) of the items;

the proportions of expenditures and the selection of assembly units for detailed investigation of the formation of expenditures;

expenditures on the manufacture of the items.

The corresponding programs can be parts of the ASUP and they can also be developed preliminarily and stored in the library of programs with the goal of utilizing them when conducting FSA of individual items or a standard series of items at the enterprise.

The second stage, which is related to the construction and analysis of the structure of the functions, is the least studied so far from the standpoint of programming and the utilization of computer equipment. An exception is electronic equipment, in which entire contours are composed of elements which perform individual functions. In this case, as the experience of the Brno division of the Scientific Research Institute of Technology and Economics of Machine Building (Czechoslovakia) shows, one can develop a program for bringing expenditures in line with functions. These problems can usually be solved on small computers and there is no point in considering including this work in the ASUP.

But as a statement of the problem for analyzing the structure of functions it would be expedient to use the square matrices of contiguity, feasibility and distances, which can be placed in the memory of the machine. Experience shows that the structures of the functions of the particular group of assembly units and items (for example, break systems, transmission boxes, pumps for moving liquids, and so forth) are analogous in their basis and can be utilized repeatedly in the same form or with certain adjustments. It would also be expedient to create at the enterprises card files of functions which include information about the methods of carrying these out and the expenditures. Information prepared in this way would be a basis for the use of algorithms for this stage of the work as well.

In the third stage of searching for new decisions one uses a number of approaches and methods of creative work, of which one can usually use algorithms on only the logical processes of creative thinking which are translated, with certain prerequisites, to the language of computer equipment. Additionally, certain heuristic methods can be used with algorithms and translated to computers, but only under the condition that the basic mass of data has been created. At the present time methods of comparing similarities and logical-mathematical models are best developed in this area.

Similarity theory is based on the disclosure of external signs which are characterized by design and technological elements of the part and coded according to a classifier, for example, the YeSKD--unified system for classification of parts in machine building. In this case the functions that are performed are not taken into account. Since the logic of comparing similarities is quite close to the logic of utilizing the YeSKD, one can consider the use of algorithms for the corresponding operations and the utilization of computer equipment. Taking into account the fact that the main set of parts in the ASUP should contain for each unit both the sign of the

design and technological classifier and the sign of the unified classification of items, the figures from this set can be used to search for similar components (parts).

The applied method consists of the following steps:

- a) adopting criteria with which to evaluate the similarity (form, size, mass, allowance, raw material, technology that is utilized, instruments and so forth;
- b) drawing up a list of no less than five parts (assembly units) for the selected criterion;
- c) determining expenditures on each part (assembly unit);
- d) comparing these expenditures with the initial decision;
- e) analyzing the variants with minimal expenditures;
- f) evaluating the possibilities of utilizing these variants (decisions) as proposals for other parts;
- g) selecting the next criterion for similarity and repeating the entire procedure;
- h) combining various causes (point "e") for reduction of expenditures into a comprehensive proposal.

Obviously, algorithms cannot be used for all of this procedure. Points "b," "c," "d" and partially "e" can be translated into computer language for all of the selected criteria. The greater the selection of parts that is included in the basic mass of data, the greater the effect that can be achieved. At large enterprises with complicated production where a unified centralized set of ASUP data has been created the utilization of computer equipment produces the greatest effect. The program can be utilized not only for conducting FSA, but also when carrying out work for unification and standardization of forms, allowances, cleanliness of the surface, technological processes and so forth.

Logical-mathematical modeling is applied in places where there are many individual solutions for individual components of the item and there is no possibility of clarifying simply which of them produces the optimal combination both from the functional and from the economic standpoint. The precision and the combinational possibilities of morphological and logical-mathematical models guarantee that not a single one of the variants will be skipped. Including unrealized possibilities in the list creates conditions for principally new decisions. The application of the method to machine-building items leads to an immense number of possible variants of the solution, which extends into several millions. In this case the utilization of computer equipment is the only promising way of realizing this method. From the standpoint of programming the task is not so complicated as it may seem at first glance. The program for evaluation can be based on Boolean algebra and logical commands for symbolic designing of variants consisting of

elements of the solution which are not mutually exclusive. This means that the FSA group must establish for each element of the logical and mathematical model:

elements of the solution which should be excluded;

elements of the solution which should be utilized;

expenditures necessary for providing for the functions in this solution.

The criterion for selection will be maximization of the comparative amount of effectiveness with limited expenditures.

Programs of logical-mathematical modeling are created for a concrete problem. As a result of the small number of cases for the utilization of this program, its development is convenient when concretizing the requirements of the FSA group. When evaluating the variants one uses the program that is developed for calculating the evaluations of the technical level of the items.

Practice has shown that by utilizing computer equipment one can reduce the time for conducting analysis to two-fifths to one-third the regular amount (for example, analysis of expenditures is reduced from the usual 3-5 months to 1-2 months). The most extensive plan for the application of computer equipment for the needs of FSA was realized at the branch enterprise "Shkoda-Pilsen." Here they developed nine programs, of which seven are programs for calculating and selection and two are for classification. At the ZTS Plant (Dubnice) they used seven programs, of which two were borrowed from other organizations and five were developed by associates of the Brno Scientific Research Institute of Technology and Economics of Machine Building during the course of preparation for practical study of FSA.

Thus in spite of a certain methodological complexity the main stages of FSA can be subjected to the use of algorithms and can be carried out successfully in an ASUP system.

#### FOOTNOTE:

1. "Osnovnyye polozheniya funktsional'no--stoimostnogo analiza" [Basic Provisions of Functional-Cost Analysis], Moscow, Izd-vo under the USSR State Committee for Science and Technology, 1982.

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RESPONSE GIVEN TO VACATION ARTICLE

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 12, Dec 84 p 186

[Response by V. P. Gerasimov and A. D. Trushkin, Kirovskiyzavod Production Association (Leningrad) to the article by A. V. Yakimets, "How To Distribute Annual Vacations," EKO, No 4, 1984: "Our Simple Method"]

[Text] Every time vacations are distributed there are serious tests of our nerves.... Therefore we have adopted a simple system which was developed by our design division which seems fair to us. Here is the essence of it.

Not long before the distribution of vacation times the trade union group organizer suggested that each member of the collective evaluate all the months of the year on a 10-point system according to his taste: the most desired would get 10 points, and the most unattractive--0. Having gathered the information, the trade union group organizer summed up the evaluations of each month and divided the result by the number of members of the collective.

After this they brought up the archive that stored the information about vacations of workers in the division during the past 4 years. Using this in the calculated average "value" of the month they found the sum of points for each worker. The one with the minimum sum was given the right to be first to select the vacation, the one with the second smallest sum--the second, and so forth. The one with the maximum points, naturally, had to be satisfied with what was left, that is, he was given the unpopular month. But there is no reason to despair. In the next year the evaluation of this month would significantly reduce the number of his points and would allow him to move up among those who have the right to first choice.

Perhaps others will like this procedure?

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## BOOK ON SOCIALIST MANAGEMENT REVIEWED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 12, Dec 84 pp 192-198

[Review by A. V. Bachurin, doctor of economic sciences, professor of the Academy of Social Sciences under the CPSU Central Committee (Moscow) of the book "Upravleniya sotsialisticheskim proizvodstvom: Problemy teorii i praktiki" [Management of Socialist Production: Problems of Theory and Practice] by V. A. Medvedev, Moscow, Politizdat, 1983, 270 pp]

[Text] The book under review, whose subject matter touches upon other of the author's works,<sup>1</sup> in our opinion, can be advantageously distinguished from similar publications in terms of the way a number of problems in the area of the theory and practice of the management of public production are posed and substantiated. The author correctly notes that a unified national economic complex is a qualitatively new step in the deepening of the public nature of production. On the one hand, there is greater differentiation of production and, on the other, it is being comprehensively integrated at all levels and in all spheres of the national economy, and the intensiveness of national economic ties increases. In this second tendency, which the author calls "the reverse side of differentiation of production," the existing structure of management is poorly taken into account. It is characterized by the existence of a large number of ministries and departments, whose quantity has continuously increased as new branches (subbranches) or management functions have appeared. Departmental tendencies and repartitions have begun to impede the development of concentration and specialization of production and to limit the scope of cooperation. Complicated problems also arise in the development of automated production and in the introduction of a flexible technology. It has turned out not to be so easy for the ministries to invest their efforts in the creation of interbranch productions and take into account the overall interests of the enterprises of a given region. Manifested herein is the departmental limitedness and the inability of individual ministries to resolve large-scale national economic or interbranch problems taking into account the greatest national economic effectiveness. The author correctly notes that one cannot say that the possibilities of the branch principle of management have been exhausted. But at the same time it must be augmented with management at the interbranch level, which takes into account the real structure of social productive forces.

## Increasing the Role of Planning in the Development of the Economy

Sufficient space is allotted in the book to problems of planning and increasing the role of the national economic plan in effective development of the economy. The main point of the restructuring of planning in the modern stage of improvement of the economic mechanism, according to the author, lies in its maximum subordination to the task of achieving the greatest final results. And he considers the greatest final result to be the development of man himself, the degree of satisfaction of his diverse needs. Reorientation of planning toward the achievement of final results requires the development of indicators that are adequate to them. Increasing the role of indicators of the delivery of products to the consumers in a specific products list when summing up the results of the work of the enterprises and providing incentives for them in and of itself does not guarantee the priority of the consumer and does not provide the proper orientation of the producer toward the achievement of the best final results. The decree of the CPSU Central Committee and the USSR Council of Ministers of 18 August, 1983, "On Measures for Accelerating Scientific and Technical Progress in the National Economy," envisions a stronger role for the consumer in the planning and creation of new technical equipment. But this issue can be successfully resolved only under the condition of balanced plans and the establishment of permanent direct ties between machine-building enterprises and the consumers. Based on this, the author thinks that when improving the economic mechanism one should not allow any one indicator to become absolute. Under current conditions the task is, by reducing the number of indicators that are set for the enterprises, to increase the significance in the evaluation of the results of economic activity of those indicators which characterize the satisfaction of needs and the effectiveness of production.

As the book correctly points out, planning is called upon to exert a profound and comprehensive influence on the minimization of expenditures which are required for satisfying one volume of social need or another. The dynamics of the relationship between the result of production and the expenditures and investments of public labor shows the total movement of the effectiveness of production. When analyzing indicators of effectiveness at various levels of the national economy, the author focuses the reader's attention on the dynamics of the output-capital ratio and the increased significance of this indicator in the practice of planning. But the indicator of output-capital ratio does not exist in plans for the national economy, branches, associations and enterprises. Moreover, it does not figure in state statistics either. One cannot agree with the author when he says that this problem insistently requires serious scientific and practical development.

## Management and Scientific and Technical Progress

In the book a great deal of attention is devoted to problems of controlling scientific and technical progress. In it scientific service for the national economy is regarded as a component of its infrastructure which requires comprehensive intensification and streamlining. It is noted in the book that it is a key problem to find organizational and economic forms of scientific service which are capable of maximally reducing the path from scientific research to practical application of the developments in series and mass

production. In this connection the author considers the positive experience of scientific production associations as a whole and points out the main directions for further improvement of the results of their activity. It is necessary to draw the attention of the readers to the idea presented in the book concerning the permanent nature of scientific and technical progress and its transformation into an immanent, endogenic aspect of expanded reproduction which is pervaded by all factors in production. An autonomous system of planning, financing and providing material incentives for scientific and technical progress which is not organically included in the economic mechanism of the existing production, in the opinion of the author, sometimes gives rise to an opposition between the interests of existing production and scientific and technical progress, an artificial contradiction between the two. It was by taking this circumstance into account that the Svetlana Association (Leningrad) came to the conclusion concerning complete unification of the interests of design bureaus and shops, science and production, by introducing an overall system of incentives for the final result of the association. But this is still a rare phenomenon. The author of the book correctly thinks that stimulation of technical improvement of existing production should proceed not past the main system of cost accounting, but through it. Special systems are called upon to provide only for reimbursement of initial expenditures on new equipment. The rest of the financing and stimulation of technical improvement of existing production should be carried out within the framework of reimbursability and cost accounting, on the basis of increasing the effectiveness of production.

#### Providing Balance and Plentiful Supplies

Why do shortages still exist in the national economy? In answering this question the author looks at shortages as the antipode to effective management and earmarks ways of overcoming it: improvement of the management of material resources, perfection of the mechanism for planned supply of labor force for the national economy, and so forth. The author's conclusions can be reduced to the following points.

Shortage is not an economic phenomenon which is inherent in a planned socialist economy. It is necessary to look for the reasons for shortages in the concrete historical conditions and the factors of their development.

One of the reasons for the continuing shortages related to the balance of plans which is sometimes incomplete and to the reliance on its achievement as a result of searching out additional resources during the course of the fulfillment of plans. It is necessary to improve planning and to form the necessary resources in the plans. Another reason is related to the failure of the associations and enterprises to fulfill production plans while continuing to make public expenditures and sometimes even increasing them. The author calls this surplus financing. In order to avoid this, it is necessary to improve the mechanism for fulfilling the plans and, if necessary, to adjust not only the production volumes and income part of the budget, but also the outlays. In brief, they must live within their means.

Overcoming shortages in the national economy cannot be reduced to a purely mechanical process: either to increasing production (supply) or to reducing

consumption (demand). In order for shortages not to continue it is necessary to make changes in the economic mechanism and in the economic methods for regulating supply and demand, and to coordinate more closely the monetary-value and physical-substantial forms of movement of the social product. Additionally, it is necessary to conduct an entire complex of organizational, scientific-technical, economic and social measures.

In this connection I should like to note that, in our opinion, an excessively large amount of space in the book is devoted to cost disproportions and not enough attention is devoted to the reasons for their appearance and ways of overcoming them. The main path to overcoming shortages and a lack of balance, of course, consists in greater intensification of public production and improvement of the quality of work at all levels of the national economy. The book contains a paragraph which is devoted to the course toward effectiveness. But it does not properly disclose the main directions for intensification which, in the modern stage, are the main means of increasing the effectiveness of public production.

#### Management and Several Questions of Economic Theory

The book under review contains many new ideas and theoretical statements which are useful for the development of economic theory.

Concerning the goal of socialist production. Under the conditions of developed socialism the goal of production cannot be reduced simply to raising the level of consumption and quantitative expansion of well-being. It is necessary to take into account its purposive influence on the structure of demands, their mobility and the change in man himself. In this connection emphasis is placed on the need for a detailed working out of the parameters of man's development in the overall context of a long-term prognosis of the development of science and technology, the image of the worker, social relations and daily life. In a word, we are speaking about a broader approach to the goal of socialism than one usually encounters in economic literature.

Concerning the position of consumer value in the economy of developed socialism. The author supports and develops the thesis that it is incorrect to exclude consumer value from the course of political economics. It is unthinkable to provide for complete well-being without increasing the orientation of production and social relations toward improvement of consumer qualities of the products of labor. It is also necessary to reduce expenditures per unit of social usefulness. Therefore the author is correct when he writes: unless consumer value is taken into account the problem of effectiveness of public production goes unattended and has no economic apparatus; consumer value is one of the main results of production.

Concerning the planned nature of socialist production and commodity-monetary relations. The book gives a new approach to characterizing the category of planned nature. It has its own instruments which are used for direct social regulation of production (the plan, norms and normatives, evaluation of consumer value and socially necessary expenditures of labor). Because commercial production remains, the mechanism of averaging socially necessary expenditures which form value continues to be in effect. It must be better

utilized. Still it would be incorrect to orient socialist production toward average expenditures which take form under the influence of actual expenditures, including inefficient ones, for example in backward areas: it is necessary to direct the development toward better but, of course, feasible goals. This criterion corresponds to the nature of socialist public property and to the conditions and needs of the scientific and technical revolution.

The interconnection between production relations and productive forces and the superstructure as an object of economic theory. In the author's correct opinion, under the conditions of extensive intensification of production it is necessary to pay more attention to problems of the interconnection between production relations and material-substantial factors in production and the political and ideological superstructure. The book correctly focuses attention on such problems as rapid and profound changes in the horizontal and vertical structures of production, the development of public cooperation in labor and public production, and the increased role of organizational and economic relations. It is not without justification that the author sees danger in the fact that a mechanical separation of production relations from the material-substantial components of production and the exclusion of organizational and economic relations from the object of political economics can draw it into the sphere of abstract discussions and thus weaken the methodological role of political economics.

In our opinion, one can basically agree with the aforementioned points, but with this remark: the main object of political economics is still production relations and the economic laws of socialism. Along with political economics there exist the economic policy, concrete economics, and the science of the principles and methods of management of the national economy. Productive forces, their economic structure and the patterns of their development are studied, as we know, by specific economic sciences. The transformation of Soviet economics into a unified national economic complex has placed on the agenda the question of deeper and more comprehensive study of economic problems related to the development and improvement of social productive forces. Political economics, being the methodological basis for other economic sciences, studies production relations in their interaction with productive forces.

The publication of V. A. Medvedev's monograph seems valuable and timely to us. Economists have been given the task of developing theoretical foundations for a new model of the economic mechanism which meets the requirements of developed socialism. The book under review is a serious contribution to solving this crucial problem.

#### FOOTNOTE

1. Medvedev, V. A., "Sotsialisticheskoye vosпроизvodstvo i konechnyye narodnokhozyaystvennyye rezul'taty. Voprosy metodologii." [Socialist Reproduction and Final National Economic Results. Questions of Methodology], Moscow, "Ekonomika," 1983, 176 pp; Medvedev, V. A., "Sotsialisticheskoye proizvodstvo. Politiko-ekonomicheskoye issledovaniye" [Socialist Production. Politico-Economic Research], second edition, Moscow, "Ekonomika," 1981, 328 pp.

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## BOOK ON HUMAN RELATIONS REVIEWED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 12, Dec 84 pp 198-201

[Review by Yu. P. Voronov (Novosibirsk) of the book "Khozyaystvennyy mekhanizm i Sorevnovaniye" [The Economic Mechanism and Competition], by M. I. Voyeykov, Moscow, "Ekonomika," 1983, 160 pp]

[Text] A long time ago, in the 16th century in England, a new court title was introduced--engineer. It was destined to become known throughout the world, and now there are people called engineers everywhere. According to the widespread opinion, the engineer should deal with technical equipment. Thus when passing through doors with the nameplate "engineer for socialist competition" some people frown: why use the title engineer here?...

One thinks about this when reading the book by M. I. Voyeykov, which just came out in the series "Socialist Competition in the Modern Stage." In the activity of the engineer for socialist competition is there an engineering element, design components--such as for developers of new technical equipment and technology?

Take, for example, the first chapter of the book: "The Objective Nature of Socialist Competition." The author argues as follows: socialist competition is closely related to the management mechanism, scientific and technical progress and international socialist integration. It has acquired a comprehensive influence not only on the economy, but also on the culture. There is no doubt about the objective nature of socialist competition. But what about the engineer for socialist competition and his creative initiative? Perhaps the book will also include a discussion of the objectiveness of the loss of social development?

We leaf through the pages impatiently and not until the end do we find a table with a purely practical heading: "System of Material and Moral Incentives for Participants in Socialist Competition" (p 117). Presented in it is the experience of the Vilnius Schetmash Plant where all kinds of incentives are broken down into five levels. Incentives of the first level include gratitude from the shop plus a 5 percent increment to the bonus. Incentives of the fifth and highest level include registration in the plant's book of honor or badges and certificates of honor from the ministry which are accompanied by a

25-percent increment to the bonus. This table is a direct recommendation for the manifestation of the creative activity of the organizer of socialist competition.

It is interesting to return to the beginning of the book and trace how M. I. Voyeykov manages to move from the objectivity of socialist competition to practical questions of its organization.

Initially the author analyzes the position of socialist competition in the economic mechanism and its interconnection with national economic planning. These sections of the book are related more to theory than to practice. But then the fourth chapter--"The Development of Competition for Increasing the Effectiveness of the Final Results"--is devoted not only to theoretical issues. One finds words which demonstrate the link with empirical material: "...As was shown by research conducted..." they, these figures, immediately impress us--after all, we are speaking about a vital sphere of awarding bonuses for results achieved in competition. How many indicators, for example, are used when summing up the results of branch socialist competition? When precisely calculated it turns out that the average number is 35, including 25 basic ones and 10 that are also taken into account. A sea of figures! There are departments which are outstanding on this plane: the Ministry of the Machine Tool and Tool-Building Industry utilizes 68 indicators and the Ministry of the Gas Industry--45. In comparison with these the Ministry of Light Industry with its immense list of products for the people gets by with only 25 (p 66). One of the paradoxes presented in the book: among enterprises of the Ministry of Industrial Construction Materials bonuses for workers in branch competition depend on...the size of the enterprise. If there are 500 workers there are 6.8 rubles in bonuses for each workers, and if there are 501 workers--11.2 rubles. Anything can provide incentives for such bonuses, but not reduction of the staff.

From the many examples one gradually sees the author's sincere sympathy for the collective of the Moscow Plant for Automotive and Tractor Electrical Equipment (ATE-1) and his experience in organizing socialist competition. The experience at ATE-1 is discussed in greater detail in other monographs in which M. I. Voyeykov participated. But this book has the advantage that it is presented compactly. ATE-1 is divided into 18 technological chains and 62 sections, and 90 percent of the workers are included in the unified system for socialist competition. When summing up the results they use one indicator--the arithmetic average of four coefficients: production volume, rhythm, quality and fulfillment of the plan according to products list. The author of the book is a convicted proponent of reducing the number of indicators used for summing up the results of socialist competition. Moreover, he is convinced that this is precisely the path that will lead to improvement not only of the organization of socialist competition, but also of the economic mechanism as a whole. The results achieved by ATE-1 show the correctness of this viewpoint. For the second five-year plan in a row, with 1,400 suppliers and more than 1,000 consumers there is not a single case of violation of delivery deadlines for 750 kinds of products.

The main chapters of the book are constructed in the same way: "Socialist Competition and Cost Accounting," "Incentives for Participants in Socialist

Competition," and "Organization of Competition in Labor Collectives." At the beginning of each is a theoretical introduction and then it moves smoothly into a discussion of advanced experience.

This system for presenting material is logical, but it does not sufficiently take into account the interests of the reading audience which consists of "specialists engaged in the theory and practice of the organization of socialist competition." This is written in the annotation to the book. In any case there are immeasurably more of the latter than there are of theoreticians. An engineer for socialist competition who is working at an enterprise, if he has displayed an interest in M. I. Voyeykov's book, has to make his way through a forest of theoretical paragraphs, selecting useful experience which stimulates his own creativity. The experience has been systematized according to problems, but this is not enough for the book to be used as a guide to action.

I can imagine the book being taken up by a person for whom the organization of socialist competition is not simply an interest, but a duty. And he really must look at it--the book is neatly printed, in good taste, with attractive plain script, and good layout of each page. It would be too bad if he were to be bored by the past theory and, having decided that it has turned over to a scientific discussion, lays the book aside.

Do not be too hasty, dear engineer for socialist competition, to put aside the reading of this work: for it is addressed to you also. It is simply that among scientific economists it is accepted to present material in such a way that the scientific words come to the fore.

For example, the author expended a good deal of energy so that the organization of socialist competition would be coordinated with the category of "socially necessary expenditures of labor." The reader encounters the abbreviation ONZT in several chapters of the book. They mean "normative expenditures of labor necessary from the standpoint of the society for producing the given product" (p 18). It is said that "the objective mechanism for forming the ONZT resolves the contradiction between social and individual (collective) economic interests," and so forth. But where do we get the viewpoint of the society?... This and many other questions remain open.

At the present time engineers for socialist competition are representatives of various specialties. The book under review convinces us that there is a special sphere of activity for them. Specialists in socialist competition must be trained in training institutions as developers who will engage in the planning of human relations in production at the enterprise. The author of the book under review should be given credit for suggesting a system of measures which are directed toward increasing the prestige of the engineer for socialist competition--an engineer of human relations in production.

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## MEMORY OF EMINENT SCIENTIST HONORED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 12, Dec 84 pp 202-208

[Article: "Aleksandr Mikhaylovich Birman"]

[Text] Prof A. M. Birman lived a full life which was happy in its own way. Not every economist manages to see such a multitude of enthusiastic students. Aleksandr Mikhaylovich's biography is externally rich in events: after completing the institute he was assigned to the USSR Gosplan where he worked first as a deputy and then as chief of the finance division. Then he changed over to teaching work--in the Moscow State Economics Institute (now--MINKh imeni G. V. Plekhanov) and the Correspondence Institute of Soviet Trade. Three or four entries in his labor book depict a calm life that has no alarm or danger.

How far this is from reality! Not long before the economic reform of 1965, at the Sokol'niki Recreation Base there was a meeting of teachers and students of economics specialties. The teachers one at a time answered the question: What character trait is most important for the economist? They named a sense of the new, vigilance, responsibility, the ability to communicate--a lot of things were said before Birman got up and said: "Courage."

Dr of Economic Sciences, Prof M. Ya. Sonin recalls: I met A. M. Birman in 1938 when he had just completed the institute and I had already been working in the Gosplan for 4 years. As distinct from my generation--although the age difference was not great--the people who came out of VUZes in 1937-1938 were more rapidly appointed to management positions if they had demonstrated the necessary capabilities during their school years. The position of chief of the finance division, a highly responsible one, was assigned to Aleksandr Mikhaylovich Birman by the chairman of the USSR Gosplan, N. A. Voznesenskiy, who valued his abilities, his efficiency and his clarity of understanding of problems.

But A. M. Birman's position frequently conflicted with the rigid nature of the Gosplan chairman who could not deal well with people who allowed themselves to object to and criticize the management. In particular, A. M. Birman and N. A. Voznesenskiy were in opposing positions regarding problems of annual reduction of prices for consumer goods. Aleksandr Mikhaylovich considered these

measures not always justified since they placed individuals with high wages in a privileged position.

I recall once at a meeting of the board of the USSR Gosplan N. A. Voznesenskiy attacked A. M. Birman: "We shall not take your path!" It was necessary to have great restraint in order to go into a calm presentation of his arguments after this rejoinder.

I also recall how, with A. M. Birman's help, I managed to "push through" a decree to the effect that each specialist has the right to raise his qualifications (training in courses)--once every 3 years in rural areas and once every 5 years in the cities. The decree pertained to specialists in the nonproduction sphere--physicians, teachers and so forth. Although this task seemed very important, it was extremely difficult to find funds to carry it out. We managed to do this only with the help of Aleksandr Mikhaylovich. Although changed with time, the system for increasing qualifications that was adopted then exists to this day.

Here are the recollections of one of Birman's fellow students, an honored economist of the RSFSR, Ya. G. Gamlitskiy, who worked for many years in the USSR Gosplan: I met Aleksandr Mikhaylovich or, as we called him at that time, Sasha, in 1932 when the students of the recently formed "second accelerated" group of the labor department under the Moscow Planning Institute imeni G. M. Krzhizhanovskiy of the USSR Gosplan met for the first time in one auditorium.

Many students of our group subsequently became well-known economists, but Sasha was singled out even then by his erudition, organization, and ability to present an idea clearly and briefly. Somehow unnoticed Birman became the recognized leader of the group, to which his personal charm also contributed. Sasha's blinding joyous smile was sympathetic to everyone, not only to girls, with whom he was always successful.

Fate arranged things in such a way that Sasha was unable to complete the short labor department course. Not long before completing the labor department and entering the institute he was called into the army and sent for training in an aviation school. After we, his comrades, had already been promoted to the second course of the evening division, Sasha was discharged because of his health. When he returned to Moscow he decided to enter the first course. But his friends in the "accelerated group," knowing his capabilities and his ability to work, advised him to take tests to skip the first course. Having obtained permission from the rectors, within several months Sasha successfully passed the exams and was enrolled in the second course of the evening division.

For the third course the labor department students were transferred to the day form of training. Before this Sasha Birman had managed to work in the USSR Gosbank in the humble position of a counter of metal money. He would joke that this was when his love for finances was instilled in him, something which did not change throughout his life.

Dr of Economic Sciences, Prof B. M. Smekhov, recalls:

The year is 1932. The tall, charming Sasha Birman is distinguished by his culture. By his cultured speech, his behavior and his extremely rigid self-discipline. Somehow without any effort in any situation he ended up at the center of attention.

The talent for being an economist was manifested in him as early as his student years, along with the talent of a leader, an organizer and an educator. Not by edifying words and admonitions, but by his own example he exerted a favorable influence on those around him. He devoted an impressive amount of energy and initiative to social work as the chairman of the trade union committee and the VUZ and subsequently of the chairman of the local committee in the Gosplan.

A. M. Birman did not allow routine work in everything. Every day he found something new and interesting in his work. This remained with him throughout his life. On his grave his colleagues in the department of which he was in charge said: He was older than us in age, but younger than us in creative fervor.

Ye. R. Khotimskaya recalls: She worked under A. M. Birman's leadership during the harsh years of the Great Patriotic War:

On the night between 16 and 17 September 1941 the USSR Gosplan was evacuated from Moscow to Kuybyshev. There was a disturbed and somber mood, a crowd of people on the platform where the Gosplan workers were boarding the train. In the car that had been assigned to the finance division there was ideal order and calmness--the result of the organizational talent of Aleksandr Mikhaylovich and, the main thing, his ability to cheer people up with a joke or a cheerful word.

The train of the USSR Gosplan happened to consist of all restaurant cars. And in the breaks between bombings, when everyone's nerves were strained to the limit, Birman thoughtfully said: "You know, never in my life have I spent so much time in restaurants...." The joke reached N. A. Voznesenskiy and, I recall, he was very happy.

It was easy to work with Aleksandr Mikhaylovich even during difficult times. He was life itself, his mood was joyful, and he was always filled with wit. This is why it was so hard to believe that he had died....

From the recollections of B. M. Smekhov:

A. M. Birman's authority as a financial expert was very great in the Gosplan. He always regarded finances as an organic part of the national economic whole. This approach was clearly manifested in his lectures, scientific works and textbooks, and also in his popular works and his amazing commentary.

I have always remembered his verbal speeches. There was a meeting. One could hear the usual things: "to raise, to expand, to deepen...." But here is what the chairman said: "Comrade Birman, Aleksandr Mikhaylovich has the floor."

The people in the hall perked up their ears: now something that was very necessary, clear and precise would be said, something that was brief and concrete. Everyone who has heard his lectures recalls this with rapture. I recall: Professor Birman always managed to give the students the right to select the lectures they attended. I have no doubt that there were never any free places in his classroom.

Once in a private conversation he admitted that he disliked examinations very much, although he could not explain this feeling. But it seems to me that the reason lay in his kindness: he suffered and shared the experiences with the students.

It was difficult to argue with him. Wherever did he find those paradoxical examples, that turbulent cascade of disarming arguments? Then, thinking it over in the peace of my own home, I agreed: this is how one should respond! Tomorrow I shall do that. But when "tomorrow" came I was again held captive by his polemical wit.

Birman did a great deal in his short life. He left a deep track in science, in economic practice, and in the training of economists and management personnel. And still I am convinced that his potential--both as a scientist and as an organizer--was far from fully utilized. But he was not to blame for this.

The scientific-pedagogical and commentarial heritage of A. M. Birman is still to be investigated. Many of his statements are aphorisms. Among them are these:

"Economics is not so much what as why and how...."

"A ruble is equally valuable whether it is paid in paper money or whether it is 'invisibly' transferred from one account to another...."

"The incomes of sales and trade organizations depend on the value of the goods. Therefore at metal sales spaces there are no cheap brands of metal, but in a restaurant cognac sells out more rapidly and easily than mineral water does...."

"Any kind of income causes a demand for goods...."

"In favor of a unified criterion for effectiveness one can give Kutuzov's expression to the effect that it is better to have an army headed by one mediocre commander than two talented ones at the same time...."

"Effectiveness is not a mathematical concept. It reflects public relations among participants in economic activity...."

"Time is the scarcest of resources in the age of the scientific and technical revolution...."

The list of A. M. Birman's aphorisms could be continued ad infinitum. Those given above were borrowed from a book written in 1980, "Ekonomicheskkiye

rychagi povysheniya effektivnosti proizvodstva" [Economic Levers for Increasing Production Effectiveness] which was published by the "Mysl" publishing house. In the preface to the book it says: there is no particular need to introduce the author to Soviet readers. He is a passionate propagandist of economic science. His books and numerous articles are widely known in our country.

"It is typical for A. M. Birman to address a broad audience of readers. His individual books are addressed to youth and he has a number of articles in literary, economics, and sociopolitical journals, and in newspapers addressed to the intelligentsia, management and science workers, and teachers. This author has earned the right to address such a diverse group of readers.

"His works, primarily on financial matters, have enriched economic science. Additionally, he has the brilliant gift of a commentator, the ability to present complicated issues of science and practice brightly and comprehensively. And all this is combined with a childlike charm and passion in defending his positions. Therefore any work by A. M. Birman is polemical in the good sense of the word. One can agree or disagree with his ideas, but he will leave nobody indifferent."

But while Aleksandr Mikhaylovich's works will be read and reread, being a model of the talent of an economist for new generations, it is considerably more difficult to preserve his image as a man. And this task is no less worthy. In the tiny cafeteria in the building on Zatsep, 41, Professor Birman moves his dirty dishes to the side so that a freshman student who has come up will have room to sit down. He does not have to speak with him, but this manner of his is also his education. Then when he leaves the cash register, waving a bunch of 10-ruble notes in his hand, gaily and loudly he says to the students standing in line for their stipends: "Do not stand in line, fellow, I have taken all the money...." Even if a small proportion of these future economists engage in a study of differentiation of income, not a single one of them will have a shamefully narrow-minded attitude toward the differences in wages.

Dr of Economic Sciences A. G. Granberg recalls:

I saw and heard A. M. Birman for the first time in 1955. He was giving a lecture on the economics of China, having just returned from a business trip there. He very clearly discussed the peculiarities of the Chinese path and the numerous paradoxes in the price policy and wages.

I was lucky. Aleksandr Mikhaylovich gave the second course, "USSR Finances," to our class and his own course which is by nature innovative, "Finances of the Branches of the National Economy." In the institute there was an independent finance department, but in the general economics department, where I studied, our class was the only one to be lucky. The memory of A. M. Birman as a teacher has remained with me all my life.

It is now in general difficult to imagine students giving an ovation to their lecturer. It was a rarity then, too, and I only heard it twice--after A. M. Birman's lecture and after B. E. Bykhovskiy's lecture.

Aleksandr Mikhaylovich combined the talent of a teacher with strict demandingness. Thus he did not allow latecomers into the classroom, and he frequently locked the door from inside as soon as he himself had entered. I remembered this device when I began to teach.

A. M. Birman was distinguished by the deepest understanding of the essence of economic education. He said that economists are taught a great deal by many people but they are not taught to make decisions in specific economic situations. Aleksandr Mikhaylovich did a great deal to develop interest in economic science among schoolchildren. This task is still before us.

Candidate of Economic Sciences Sh. B. Sverdlik recalls:

Students who have studied financial science from A. M. Birman's textbooks and then encounter the same name in literary and artistic journals sometimes think that these are two people with the same name. They cannot believe that one and the same person can give a strictly scientific explanation of the most complicated problems of financial interrelations and in a clear popular commentarial form defend the truth of his views and discussions on pressing socioeconomic issues.

Only those who knew Aleksandr Mikhaylovich well could see the value of this diversity--he was working all the time and everywhere: at home at his desk, at numerous conferences and seminars, in official and unofficial meetings with economists and managers, in the department and in student classrooms.

I recall that after I had defended my candidate's dissertation I decided to allow myself a "break" and in my regular meeting with Aleksandr Mikhaylovich I admitted my scientific inactivity. He said half-seriously: "Mea culpa, I did not have to give a positive response to your dissertation...."

A. M. Birman's attraction for economic science crowded out many other attractions which, in his opinion, create the appearance of comfort but frequently rob a person. In his modestly appointed apartment books prevailed, many signed by eminent Soviet scholars. In his files were neatly sorted headings for future publications. "Here," Aleksandr Mikhaylovich showed me, "is stored raw material, and here--incomplete production...." He considered not having a car, a dacha, pictures or china to be a necessary attribute of fruitful labor.

Conversations with him were always enriching, although they did not always proceed smoothly. He listened to objections attentively, quickly found the weak spot and with two or three efficient phrases caused his interlocutor to think, to find new arguments or to agree. If a stubborn opponent, being pinned against the wall, continued to defend his point of view, Aleksandr Mikhaylovich was able to remove the tension from the situation with a joke, without degrading his defeated opponent, to restore his self-confidence, to eliminate doubt, and to direct him to continue to search for the truth.

Even these brief reminiscences of friends and colleagues which we have provided help to see the unusual personality of this patriot and scholar. An

outstanding economist and educator, Aleksandr Mikhaylovich Birman will always be an example of self-sacrificing service to the homeland the flourishing of its economic might.

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#### READERS' CONFERENCE HELD IN KEMEROVO

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 12, Dec 84 pp 209-210

[Text] Attending the conference were deputy directors for economics and head economists of associations and enterprises of the coal, metallurgical, chemical and other branches of industry of the Kuzbass, construction workers, workers of party and trade union organizations, scientific research institutions and VUZes.

The deputy editor in chief, B. P. Orlov, announced the work plan of the editorial board. He responded to numerous questions from participants in the meeting. They expressed a number of critical remarks and wishes to the magazine.

L. A. Churilov, head economist of the Raspadskaya mine, advised us to publish more analytical materials concerning the work of enterprises and to consider concrete situations which arise during the course of economic activity.

This suggestion was seconded by V. A. Zhuravleva, the head of the office for political education of the Kuzbassgrazhdanstroy Trust. She criticized the journal for its weak depiction on its pages of socioeconomic problems of the Siberian region.

V. V. Lushev, the chief of the laboratory of the Kuznetsk Metallurgical Combine, noted shortcomings in individual articles under the rubric "Experience of Leading Enterprises." In his opinion, such articles should be augmented with commentary from specialists.

In the opinion of I. S. Dreytser, a scientific associate of the Kuznetsk branch of the Scientific Research and Planning-Design Institute for the Extraction of Minerals by the Open Method, the magazine should reflect the results of expedition work conducted by economists of the Siberian branch of the Academy of Sciences. Thus the Institute of Economics conducted two expeditions to the Kuzbass in 1981 and 1983, but the readers learned nothing about the results that were obtained during the course of the investigations.

The opinion was expressed at the conference that we should pay more attention to crucial problems of the socioeconomic development of the Kuzbass.

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## MAGAZINE EVALUATED BY READERS

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMyshLENNOGO PROIZVODSTVA (EKO) in Russian No 12, Dec 84 pp 210-212

[Article by V. D. Rechin, member of the EKO editorial board: "Readers Evaluate Journal"]

[Text] Last summer at a meeting of the editorial board of the magazine we considered the results of a questionnaire of the readers regarding the materials published in EKO during 1983. As we know, the evaluation is given by voluntary respondents--friends of EKO who receive the questionnaires sent by the editorial staff and, by filling them out, evaluable the quality of the materials that are published in each regular issue.

In 1983 more than 500 people provided expert evaluations. Their ratings were averaged and differentiated: the opinion of production workers was taken separately, VUZ instructors--separately, and so forth. The following questions were formalized and, because of this, could be subjected to quantitative generalization: was the material read attentively, skimmed or not read at all; on a 5-point scale--how crucial, useful and interesting was each article. The person who fills out the questionnaire, naturally, expresses his own personal opinion regarding the materials, and it can be random, but the average rating can be regarded as sufficiently representative to judge the generalized opinion of the readers and individual groups of them. Also important are the comments (justifications) that accompany the responses to the questions. The members of the editorial board, having discussed the results of the questionnaire, decided that it would be expedient to inform the readers of them.

Rubrics. The friends of EKO who responded think that the most successful in terms of all the aforementioned criteria in 1983 were materials under the rubric "Leninist Lessons in Management" (all articles were given a rating considerably higher than the average level), "Improvement of the Economic Mechanism" (especially the articles by A. M. Birman--No 9, by B. P. Kurashvili in No 10, and the "round table" in No 8--"A Decisive Restructuring Is Needed"), "We Raise the Problem" (I. I. Usacheva, No 1, V. F. Komarov--No 3, and I. A. Rudokas--No 7), "The Floor--To the Director" (L. V. Markin--No 5, B. I. Fomin--No 7, G. A. Golovanov--Nos 9-10, and G. S. Antonenko--No 11), "Psychology of Administration" and "Advice to the Businessman."

Selections. In the 12 issues of 1983 about 20 selections of materials were published. The most points were given to "1983--The Year of Karl Marx"--in No 5, "How To Chair a Meeting"--No 6, and all of the selections of responses to the article by I. I. Usacheva--in Nos 4, 8 and 11. Relatively low ratings were given to "Rural Labor Resources--For Both the Country and the City"--in No 9, and also the selection of articles on problems of the electrothermal industry and printed products.

On the whole EKO readers hold the view that presenting materials in the form of selections in many cases is preferable to presenting the same subject in an individual article: one can consider the problem more completely and comprehensively, and the diversity of styles of presentation makes them easier to read. But, as we know, this does not mean that the articles from the selections were given higher-than-average ratings.

Among the selections in 1983 were fairly long ones--16 magazine pages, and short ones--up to 20 pages. One cannot say that the attitude toward them on the part of the readers depends on their volume. Of greatest importance is the selection of the subject (whether or not they read the article at all depends on this), and then--the quality of presentation, originality and language.

Individual articles--look in EKO No 12 for the "Index of Articles Published in 1983." During the course of the entire year about 350 articles were offered to the readers. They differed very much in terms of the problems they were called upon to solve, in terms of their length, and in terms of other qualities. But they all do have something in common: they must be useful to the reader and interesting. If this criterion had not been met, the friends of EKO gave them a rating of 2 or 1 in the questionnaires--this depended on temperament as well. But the editorial staff not only was not offended by this (it understood that it is primarily an evaluation of its work), but in all ways called for the greatest possible amount of criticism: this is a way of helping the magazine.

Here are the articles that received almost unanimously high ratings: G. Kh. Popov, "Lenin on the Fight Against Bureaucratism" (No 2); Ye. I. Komarov, "Organization and Business Efficiency" (No 10); G. A. Kulagin, "The Directors' Daily Life" (Nos 1-3); and also Artur Blokh, "Murphy's Law" (Nos 1-3) and J. T. Malloy, "Dress for Success" (Nos 8, 9). Production workers liked the article by A. A. Balayev, "Entering a Position" (No 1) and I. A. Rudokas, "Fewer Inspectors and Better Quality!" (No 7). VUZ instructors and scientific associates singled out the article by V. Sh. Rapoport, "Technology of Management--The New Engineering Discipline" (No 3), the translation from the book by Steven Robev, "The Price of a Discovery" (Nos 10-12) and the selection "09--EKO" and "You Ask--We Answer" (No 1).

Readers who are workers at enterprises give an average rating that is somewhat higher than that of other categories of readers.

After analyzing the discussing all the rich information which is provided by systematic questionnaires of the readers, the editorial board drew a number of

conclusions for improving the magazine: concerning the introduction of new rubrics and strengthening certain traditional ones, improving the planning of the issues and further developing contacts with readers. Here they took into account the first results of the questionnaire "Who Are You, Our Reader?"

The editorial board and the editorial staff of the magazine thank all of their voluntary and selfless assistants for their labor--regularly filling out questionnaires concerning the quality of issues of EKO, and also for publicizing the magazine, and they ask all readers to respond to the articles and thus help EKO to develop. We are awaiting with special interest the general and particular advice and wishes: what else can be done to the magazine, where it has begun to lose ground, and which of its innovations deserve support?

The magazine develops as long as it has feedback.

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## CREATION OF EARTH SATIRIZED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 12, Dec 84 pp 213-215

[Article by Oleg Kostman (Novosibirsk): "The Truth About the Flood"]

[Text] The task earmarked for today was especially responsible: they were summing up the results before putting into operation the next creation of the world.

Yes, yes, there were only 6 weeks left until this long-awaited day. It seems that it was quite recently that it dawned on Him to include in the title list the objects "the earth" and "the heavens." And yet millennia have passed since then! Just think how fast time flies....

To tell the truth, these objects entailed so much trouble and concern that He more than once wished that He had not started the whole project. But it was necessary to separate the light from the darkness and the land from the water.... But there was so much confusion among the subcontractors during the planning and introduction of the living creatures! It is terrible to recall! And then when suddenly the experiment with Adam and Eve got out of control! For it was necessary not to fall flat on His face, but to give the appearance that everything was exactly as He planned it.

But, glory to Him, now all these difficulties are in the past. He looked around once again at the innocent faces of the archangels under His jurisdiction who were blowing up a large cloud in the seventh heaven and with satisfaction He proclaimed:

"Well, it seems that we are all gathered together. We can begin...."

...Those who had gathered began to report in turn:

"The assimilation of natural resources--in keeping with the established scheduled...."

"The development of trades--on a level close to that that was planned...."

"There has been a rapid growth of population--the human breed is successfully being fruitful and multiplying, fully in keeping with Your brilliant directive...."

He looked with approval at those who were speaking and with interest clarified:

"Are they having birth pangs?"

"Birth pangs, birth pangs, exactly as You ordered...."

"That is good! Let them continue further," He summed up with satisfaction.

The results were gratifying. It was felt that the collective would approach the release of this responsible object with good labor successes. But before completing the plan, for the sake of form He said:

"Does anybody have any remarks?"

"A formal disgrace is being perpetrated," one senile little archangel began to mutter from a far corner. "The young angels have lost their shame. Every blessed night they fly down to see the daughters of man. And if only one of the senior angels would take them in hand--but no, nobody wants to have anything to do with this!"

"Look, a saint has turned up," He thought with dissatisfaction. "You have been on a personal pension for a long time!" But since there has been a signal, one must take measures. And He turned to His deputy for consumer services.

"How is it that you have forgotten about such an important aspect of the work with young specialists? You must find something for them to do and give them a reasonable outlet for their excessive energy. Organize, for example, a meteor ball competition. Or, say, a competition in flinging bolts of lightning...."

"A competition in lightning-bolt flinging will not do," objected the archangel who was responsible for water supply. "The suppliers of precipitation from the neighboring universe will let us down. We have already adjusted the plan for them and still for 300 years they have shorted us. And it was necessary to reduce the quantity of rain we used to a minimum, especially in storms. Incidentally, there was a large savings...."

"Whaaat?" He began to thunder. "Do you understand what you are saying? In 6 weeks we are going to release this object, all the indicators are up to date, not a thing can be said against it, and then when it comes to precipitation it turns out that for 300 hundred years they have not met their limits! And you cannot get around the suppliers!" Seeing that the person responsible for water supply wanted to say something in his own defense regarding objective factors, He burst out even more strongly: "Do you really not understand: once we do not have the limits, this means that we will not

produce the volumes. And if we do not produce the volumes--there will not be a single bonus for anyone. They will be as scarce as hens' teeth!"

Nobody was happy about such prospects. Everyone was covered with a gloomy silence.

"Well, I'll tell you what," seeing how deeply His subordinates felt their guilt for the arrears that had been allowed, He said calmly. "I am almighty and in my kingdom there are no situations from which there is no escape. We have 6 weeks left. We shall catch up. I order you, in the first place, immediately to unleash all the reserve downpours of rain. Second, make contact immediately with the Big Dipper. Promise them anything, but get some precipitation out of them. Right down to the last drop!"

Forty days passed. The task that was set had been carried out successfully. The archangels gathered again in the seventh heaven to festively celebrate the early release of this important facility. In the vest pockets of their dress robes they felt the pleasant weight of honorably earned bonuses.

But at that time immense waves of recklessly flowing water started tumbling down. Floating smoothly on them was the only ark that had remained intact, sailing slowly in the direction of Mount Ararat, whose peak was still hidden in the deep.

The important object already needed capital repair. But this was the concern of the associate organization. And its estimators, impatiently tapping their fingers and playfully butting each other with their horns, joyfully estimated what their bonus would be when they had completely utilized the limits and assimilated all volumes allotted for capital repair of this just-created world.

And the earth still had to pass through all of the ice ages.

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